StreamNet Fiscal Year 2011 Annual Report

Period covered:
October 1, 2010 through September 30, 2011

StreamNet Project

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Executive Summary

During Fiscal year 2011 (FY-11) the StreamNet project continued to shift emphasis toward providing greater support for Columbia Basin scale reporting of higher level derived data to track progress toward FCRPS Biological Opinion and ESA recovery objectives. Direction for this shift came from the project's participation in the Coordinated Assessments (CA) project (http://www.pnamp.org/project/3129), which is a collaborative effort among the basin's state and tribal fisheries managers and regional scale entities to develop a coordinated approach to monitoring and sharing the resulting data. The effort was led by the Pacific Northwest Aquatic Monitoring Partnership (PNAMP) and the Columbia Basin Fish and Wildlife Authority (CBFWA), with StreamNet as the third member of the planning team's "core group".

Activities related to the CA project revolved around planning the project, defining the specific data elements to be shared, evaluating agency capacity for sharing the specific data elements, evaluating internal data flow pathways in the data source agencies, and assisting the agencies with identifying gaps and needs related to sharing these data routinely and developing strategies for doing so in the future. StreamNet hired a temporary staff of ten data specialists to conduct this work. For FY-11, actual data development and update work under Work Element 159 continued as in the past, but planning during the year led to plans to significantly adjust data development work in FY-12 and beyond to place greater emphasis on the derived indicators and metrics identified by the CA project and agency system development. Some work on the standard StreamNet data types will have to be deferred, at least temporarily, to accomplish this adjustment.

Organization of the StreamNet project remained unchanged in FY-11. The project operated under two separate contracts with Bonneville Power Administration (BPA), one with Columbia River Inter-Tribal Fish Commission (CRITFC) under the Columbia Basin Fish Accords and the other with Pacific States Marine Fisheries Commission (PSMFC) for the non-CRITFC portions of the project. The project continued to function as a single project despite two contracts. We continued to use the successful model of embedding data management specialists inside the data source agencies to locate, obtain, standardize, and georeference the standard data and provide them to the StreamNet database. These partner agencies also provided guidance to the project through participation on the StreamNet Steering Committee. These functions were supported through sub-contracts with Idaho Department of Fish and Game (IDFG), Montana Fish, Wildlife and Parks (MFWP), Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife, and the US Fish and Wildlife Service.

Project emphasis on assisting our partner agencies to develop internal database management systems, as described in the StreamNet Strategic Plan, is beginning to pay off with improved efficiency in data acquisition, standardization and flow to StreamNet. The data compiler in IDFG was able to query the Idaho Fish and Wildlife Information System (IFWIS) to obtain annual data updates, significantly simplifying and speeding the acquisition and standardization of the data, freeing time to address additional data sets. Progress toward developing internal database systems was made in WDFW, and will begin in ODFW in FY-12. Emphasis on this approach will increase in future years through our collaboration with the Coordinated Assessments project, which has resulted in a plan to increase tribal involvement with StreamNet in FY-12 and increased emphasis on developing the internal data management capacity necessary for distributed dissemination of data.

The StreamNet website (www.streamnet.org) continued to serve as the primary means of disseminating data. Use of the main website not including the tabular data query system or the interactive map applications increased this year, with 25,169 individual visits (any number of page views) from 16,586 unique IP addresses, or 9.3% and 19.1% respectively. Use of the data source portions of the site was lower than the main website, and relatively flat from last year. For the tabular data query system, for visitors who actually viewed or downloaded data, there were 5,592 visits (-3%) from 2,889 unique IP addresses (-0.6%). For the map applications, there were 7,169 visits (-0.7%) from 3,927 unique IP addresses (+8.5%). Overall, the largest amount of use was from individuals using Internet Service Providers (52%), followed by federal agencies (22%), state agencies (17%), consultants (5%), universities (3%), county governments (0.5%), high school (0.1%) and tribes (0.1%). For the data access sections (tabular data query and interactive mappers combined) the usage breakdown was ISPs (40.6%), federal agencies (30.0%), state agencies (17.7%), consultants (7.0%), universities (3.7%), counties (0.9%), high school (0.2%) and tribes (0.2%). More visitors used the map applications (3,927 unique IP addresses) than the tabular query system (2,899).

During the year significant effort was expended in redesigning the online data query system. The goal was to improve the look and feel of the query system, improve "user friendliness," and allow selection of multiple values for selection criteria while also maintaining many of the more powerful features of the existing query system. An initial approach was abandoned when we encountered problems with circular logic, given the complexity of the StreamNet database. We finally adopted a new approach based on web services and moving the filtering operations inside the database. In addition, the new interface integrates mapping location and display of data with the tabular database and allows users to create and save customized page layout and functionality between visits. The new system was still under development at the end of the year and will be deployed in January, 2012.

Routine updates of the standard data sets in StreamNet continued this year. Development of a "mixed scale" hydrography (MSH) also continued during the year. The MSH consists of the 1:100,000 hydrography plus all finer scale streams that have StreamNet data tied to them. The hydrography is used internally to tie StreamNet data to the hydrography for display on maps and so the data can be related by position in the stream network. This is an interim solution until a 1:24,000 routed hydrography with whole stream identifiers becomes available, either from National Hydrography Dataset (NHD) from USGS or by building identifiers on the NHD line work.

Coordination functions this year centered around the Coordinated Assessments project. StreamNet served on the Planning Group and the Core Team. In addition, project staff in our partner agencies participated in the CA project for their agencies. We participated in the development of a Data Exchange Format that defined the specific data elements that will be served in the initial phases of the project. StreamNet led an effort to test the availability and accessibility of those target data sets in the source state and tribal fisheries agencies, and assisted with description of data flow pathways and identification of gaps and needs for making sharing of these data routine practice. The data priorities identified through the CA project were used in the development of the FY-13 project proposal under the NPCC Category Review of regional database projects, with the CA data priorities adopted as StreamNet priorities. Other routine coordination functions also continued, including serving on the PNAMP Steering Committee, Data Management Leadership Team and the Metadata Work Group. We also continued participation on a project funded by the US Fish and Wildlife Service in California to develop a database and analysis platform for estimating juvenile salmonid production from smolt trap data. We will make this platform available to agencies in the Columbia Basin when it is completed.

StreamNet remains committed to providing standardized and georeferenced fish data from the management agencies to support regional scale programs. Ongoing goals include utilizing data automation to speed data conversion to regional standards and updating ongoing data trends, expanding data capture and standardization to include additional derived data types needed for regional scale monitoring and BiOp reporting, and improving data access capabilities. Emphasis has increased on regional scale reporting, development of agency internal data management capacity, and increased involvement of tribes. We anticipate that these directions will grow in importance going forward.

Introduction

This report describes work accomplished by the StreamNet Project, BPA Project Numbers 1988-108-04 and 2008-505-00, during Fiscal Year 2011 (FY-11) from October 1, 2010 through September 30, 2011. Details about the work done to accomplish the year's Milestones are summarized and reported at the Work Element level. WE Titles and Milestones are described in the 2010 Work Statement which is available through Pisces, the BPA project management system, and in the StreamNet Documents page of the project website, www.streamnet.org.

StreamNet is a cooperative, multi-agency data compilation and data management project authorized by the Northwest Power and Conservation Council's (NPCC) Fish and Wildlife Program (FWP), funded primarily by the Bonneville Power Administration (BPA) through two contracts, one with Pacific States Marine Fisheries Commission (PSMFC) and the Columbia River Inter-Tribal Fish Commission (CRITFC). This report consolidates project activities under both contracts. The project is administered by the PSMFC. The PSMFC contract includes subcontracts for Idaho Fish and Game (IDFG), Montana Fish, Wildlife and Parks (MFWP), Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW) and the U.S. Fish and Wildlife Service (FWS) which constitute the majority of the project. The sub-projects in the agencies acquire, georeference and standardize fish related data; develop databases within the respective agencies; and submit data to the StreamNet database at PSMFC. CRITFC is responsible for some data development and submission and is also responsible for operating and maintaining the StreamNet Library, which maintains a library of data references and fish and wildlife related reports and publications as well as performing as a full service library. PSMFC performs overall project management, maintains and manages the regional database, disseminates regionally standardized data, and provides regional data services. Information about the project, fish related data, past reports and other documents are available at the project website.

Work priorities for FY-11 were organized under six Work Elements: Data development (WE 159), Database Management (WE 160), Data Dissemination (WE 161), Regional Coordination (WE 189), Manage and Administer Projects (WE 119), Annual Report (WE 132), and Produce Pisces Status Report (WE 185). The CRITFC 2011 Statement of Work was similar, with the only difference being use of WE 99 used to cover the StreamNet Library's public involvement efforts rather than considering those as data dissemination under WE 161 as in the rest of the project. Those activities are presented under WE 161 in this report in order to keep similar efforts grouped together.

Activities for FY-2011 are presented below, summarized at the Work Element level. More detailed activities for each Work Element Title are presented in Appendix A. Work performed that related to StreamNet goals but was not included in the formal Statement of Work or was accomplished on other funding sources is presented in Appendix B.

Project Accomplishments by Work Element

Work Element 159: Data Development

Data development work includes the acquisition of data from the data source agencies, standardization of the data to fit the common regional standard of the StreamNet Data Exchange Format (DEF), addition of georeferencing to the data, QA/AC at the agency level, and exchange of the data to the StreamNet database at PSMFC. The majority of this work is done by the agency partners in the project. Data compilers in the partner agencies had the ability to test load their data into an external copy of the StreamNet database to assure that the data are fully compatible with the DEF and will load smoothly when submitted to PSMFC.

Project	Accomplishments During Fiscal Year 2011, Work Element 159: Transfer/Consolidate Regionally Standardized Data
CRITFC	The CRITFC portion of the StreamNet project primarily provided fisheries library services to the region, particularly access to source documents for the data added to the main StreamNet database. The StreamNet Library collects, organizes and shares textual and other information that analyzes and interprets numeric data into terms managers and others can use for their planning and management actions. Additionally, the CRITFC portion of the project provided tribal priorities, perspectives and needs to regional planning and work groups and kept member tribal projects informed of regional data management and sharing progress.
FWS	FWS acquired data from the national fish hatcheries and submitted them to the StreamNet database in the DEF format.
IDFG	IDFG compiled spring/summer Chinook salmon and Shoshone sculpin generalized fish distribution records and submitted them to the central StreamNet database. Survey data for northern leatherside chub and bluehead sucker were georeferenced and entered into Idaho Fish and Wildlife Information System (IFWIS) databases in preparation for range-wide status assessments. Redd counts for spring/summer Chinook salmon were extracted from the IFWIS spawning ground survey database, converted into the StreamNet data exchange format and submitted to PSMFC for inclusion in the central StreamNet database. 2010 hatchery return data were extracted from the IFWIS anadromous hatchery database. The data were formatted into the StreamNet data exchange format and submitted to PSMFC for inclusion in the central StreamNet database. Age composition data for 2010 spring/summer Chinook salmon returns were obtained from the IDFG post-run age analysis data, converted into the StreamNet data exchange format and submitted to PSMFC. IDFG worked on compiling and reconciling historical Snake River sockeye data and entering them into the IFWIS database for eventual submission to the central StreamNet database. Hatchery facility information was updated in IFWIS and submitted to PSMFC. References for all of the new IDFG data submissions were submitted to the StreamNet Library.
MFWP	Visits were made or data were received from each regional/field office with additional data collected over the year to complete the annual update. Over 2,500 fish distribution records, 2,226 survey locations, over 15,000 survey records, over 100 trend records, 445 barrier records, 125 genetic sample locations and 184 sample results were added or updated throughout the year as well as 94 restoration projects. Updated data were exchanged with the main StreamNet database. The Yellowstone Cutthroat Trout assessment database was updated during the year. A web data reviewer was published by MFWP to allow biologists to view the historic assessment data and prepare them for making edits. Updates were made using remote meeting technology due to MFWP travel restrictions. Assessment data were made available publically through the StreamNet Data Store. An angling pressure data layer was developed by MFWP for inclusion in the Crucial Areas Planning System (CAPS) application. Final and contributing CAPS layer data was submitted to the Data Store. The data submitted included aquatic connectivity, game fish life history, game fish life history support areas, game fish quality, genetics, species of concern, unique fishing opportunities and native species on streams and lakes in western Montana.
ODFW	ODFW StreamNet met all of its data delivery requirements during the fiscal year. Data delivered or made available to StreamNet included anadromous and resident fish distribution, barriers, freshwater/estuary harvest information, juvenile abundance, dam facility, hatchery return data, and 2,056 new, updated and/or corrected abundance trends. The year's work brings the total number of Oregon abundance trends to 9,640 spanning the years 1938 through 2011. Routine QA/QC efforts were conducted throughout the year. A total of 21,257 Barrier table records were delivered along with metadata to Regional StreamNet. A total of 2,504 Dam table records were also delivered along with metadata to Regional StreamNet. New age data were not made available by ODFW during this fiscal year and therefore were not exchanged. Hatchery return submissions were limited because the position that handles hatchery data was vacant most of the year. Monitoring, evaluating and responding to 100k LLID/ 24k Framework / NHD hydro needs continued to take significant time, though the required effort was down from the previous year. ODFW began the process of closing its Library during this report period. This will be completed in the fall of 2011.

Seven hundred thirty one reference documents were submitted to the StreamNet Library related to these data submissions. This represents a significant increase over prior years because our Data Steward and Data Technician positions were staffed for much of the year, and a concerted QA/QC effort was made related to references.

Region Data development by staff at the Regional StreamNet office at PSMFC consisted of managing the Data Store and providing documents to the StreamNet Library. Eleven new data sets were added to the Data Store this year, including data from StreamNet partner agencies (MFWP) and other agencies not currently participants in the project. 1,100 data source documents were provided to the library from sources in the partner agencies, along with a few general documents.

WDFW WDFW's concentration in this year's data development included participation in The Coordinated Assessments High Level Indictor workshops and steering committees. WDFW continued to modernize and refine field to HQ data flows through the use of data loggers and the development of integrated data sets. We worked through the Coordinated Assessments initiative to map regional contributing data sets for the High Level Indicators. Data development this year include the completion of Columbia River data flow diagram diagrams as well as the mainstem Columbia River sport and commercial database. Also completed this period were the Age and Scales database for Columbia River including historical data, major improvements to Spawner Ground Survey spatial data, including new ties to redd data. Additionally, WDFW began collecting PIT tag data in the Columbia River (WA side) using new data loggers.

Work Element 160: Database Management

Database management entailed the routine maintenance and upgrades to the hardware and software that are used to manage the StreamNet data and to map and disseminate them via the various components of the StreamNet website, www.streamnet.org. All data systems at the PSMFC and participating agency levels were fully maintained this year, and upgraded as necessary. PSMFC continued to support an external copy of the main StreamNet database so that data compilers in the agencies can access the database directly to determine whether the data are fully compliant and will load smoothly prior to exchange with PSMFC. Long range goals for this approach include the ability for compilers to load the data directly into the StreamNet database.

Significant effort was applied to developing a complete redesign of the primary tabular data query system. The intent is to improve speed, simplify the query process, and allow selection of more than one element within a selection criterion. The new application utilizes web services from the StreamNet database and moves the filtering into the database to significantly improve speed. Deployment of the new system is planned for January 2012.

Project **Accomplishments During Fiscal Year 2010, Work Element 160: Create/Manage/Maintain Database**

CRITFC Hardware continues to function, though with minor outages, we will be considering our technology/computer plan and how to upgrade our servers to more reliable equipment. The library software was not upgraded in FY2011, though we are due for several upgrades and will complete those in FY2012.

As materials were received, properly submitted records were added to the catalog. Those records not in compliance with the Reference Submission Guidelines created a backlog of materials and delays in processing. Current cataloging practices of using records from the OCLC bibliographic utility were followed, and records are checked as the books are processed by both the librarian and the library technician.

FWS The FWS StreamNet project updated all of the datasets that it routinely provides to StreamNet and all database systems were maintained.

IDFG Using non-StreamNet funds, IDFG provided regular server administration and database backups for all the servers used by IDFG StreamNet. IDFG StreamNet personnel also worked with IDFG and State of Idaho Department of Administration personnel to debug and improve Internet access and speed issues. IDFG StreamNet staff members worked with agency biologists to make changes to the IDFG Spawning Ground Survey. IDFG StreamNet continued to support and develop the anadromous hatchery database. The steering committee for the anadromous hatchery database decided to move the database to PSMFC and IDFG StreamNet personnel worked with PSMFC personnel to prepare for that migration. IDFG StreamNet personnel conducted quality control reviews of redd count and carcass data from 2010 and 2011 field surveys. The review included "snapping" the redd, carcass, and survey GPS locations to the StreamNet hydrography. Incorrectly coded species codes for spring/summer Chinook salmon were corrected in the IDFG Spawning Ground database. Steelhead and Chinook salmon hatchery return data were also given a thorough quality control review. IDFG reviewed its species code table to correct common names to change instances of redband trout (native) to rainbow trout above Shoshone Falls. Stream names in the distribution layers for redband trout and Yellowstone cutthroat trout were verified with IDFG biologists. The Idaho hatchery facilities and trap tables were updated. IDFG personnel participated in StreamNet Technical Committee, contributing to a variety of data exchange issues. Web reports from the Idaho Fish and Wildlife Information System were demonstrated to the StreamNet Technical Committee.

MFWP StreamNet staff was very involved in the development and creation of an agency wide centralized survey and inventory database. Staff members attended meetings and provided data requirements reflecting StreamNet DEF requirements. All MFWP mapping services were migrated to the MFWP infrastructure. A regional data review mapper was developed for reviewing cross boundary data layers. A modularized mapping application was launched near the end of the year. All new MFWP applications use the new framework and legacy application will be migrated to the new technology.

ODFW ODFW StreamNet performed routine database maintenance and management throughout the year. Computer systems were upgraded and repaired as necessary. Desktop GIS systems were upgraded to ArcGIS 10, while servers remained at version 9.3. All applicable QA/QC routines on accumulated data sets were carried out. Application maintenance and development occurred throughout the year, including migrating several applications from .NET Framework 1.1 to 3.5. Modifications were made to Oregon's Trend database to more efficiently address SOTR and Coordinated Assessment data needs and edits prescribed by mixed scale hydro changes. We continued development and management of geodatabases and standardized metadata to manage GIS data. The need for a juvenile abundance DEF continues. Staff crafted and diagramed a proposed ODFW Information Management System, refining the design based on ODFW input.

Region All data systems were successfully managed and upgraded as needed at PSMFC. Annual data updates occurred, and all data received were passed through our QA procedures prior to loading in the database. All data were routinely backed up. We continued gradual movement to greater utilization of virtual servers from dedicated servers. A new dedicated server was obtained and cost shared through a joint effort with the Lower Snake River Compensation Program and it is now being used by both the LSRCP Hatchery Database Project and StreamNet. No changes were needed to the Data Exchange Format this year, but we did assist the Coordinated Assessments with development of a Data Exchange Template for that data sharing effort. Significant effort was placed on developing a new online data query system this year. The new approach is based on web services and using a filter mechanism inside the database. The new system will be more intuitive and user friendly, and takes better advantage of GIS display of the data. Deployment of the new system is expected in January, 2012.

WDFW During FY-2011 StreamNet staff continued upgrading internal databases from Access to SQL Server in anticipation of future integration with our agency's Salmon Conservation Reporting database (SCoRE) . Additionally, much attention was paid to moving historical data from local biologists' field data systems into regionally combined formats. Though this project is not complete, much progress has been made. Data included in this effort are age and scales sampling data, spawning ground survey data and juvenile migrant data. All systems were backed up and regularly scheduled maintenance performed.

Work Element 161: Data Dissemination

Data dissemination included all processes related to providing data and other information to data users. The primary means of data dissemination was the StreamNet website, www.streamnet.org, which includes the tabular data query system, interactive map applications to view and obtain data, the Data Store online archive to save and to locate data sets, responses to direct requests for data or assistance, and the StreamNet Library which houses data source documents for the data in StreamNet and also provides a full suite of library services.

Use of the StreamNet website and data delivery systems remained fairly steady in FY-11. There was an overall increase in use of the main website not including the data query and interactive mappers (Table 1). Use statistics have been tracked using Google Analytics since 2009. Since Analytics is more precise in eliminating extraneous activity on the site, usage appeared to drop when we began using it. However, the statistics have been relatively steady since them, and we believe that these estimates are much more accurate. Website statistics do not include the online tabular data query system or the interactive map applications, which are reported separately. Use of the query system is based on only those visits where actual data were viewed or downloaded.

Table 1. Summary of use statistics for the three primary components of the StreamNet website.

	StreamNet Website (partial)			Tabular Query System			Interactive Maps		
Statistic	**2011**	**2010**	**% change**	**2011**	**2010**	**% change**	**2011**	**2010**	**% change**
Total Visits	25,169	23,029	9.3	5,592	5,786	-3.4	7,169	7,218	-0.7
Unique Visitors	16,586	13,924	19.1	2,889	2,906	-0.6	3,927	3,620	8.5
Page views	63,186	49,725	27.1	73,283	81,472	-10.0	28,379	29,170	-2.7
Av. Page Views	2.51	2.16	16.2	13.1	14.08	-7.0	3.96	4.04	-2.0
Av. Time on Site (min)	**1.58**	2.06	-23.3	7.57	7.45	1.6	3.33	3.58	-7.0

The composition of users of the StreamNet website is summarized in Table 2. Once again, people using Internet Service Providers were the largest single group, making up roughly half of all visits. We have no way of knowing how many of these represent biologists or other professionals using home computers or who are stationed at remote sites that have only this kind of connection to the Internet. We can probably assume that many of these are from the general public. Of the identifiable domains, federal and state agencies are the next largest groups of users. Details of use by agency are presented in Appendix A.

Table 2. Summary of types of users of the StreamNet website in FY-11.

	StreamNet Website (partial)		Tabular Query System		Interactive Maps	
Type of User	**# Visits**	**%**	**# Visits**	**%**	**# Visits**	**%**
ISP	4,200	68.4%	1,200	36.1%	2,322	43.4%
Government, Federal	642	10.4%	830	24.9%	1,760	32.9%
Government, State	952	15.5%	944	28.4%	595	11.1%
Government, county, local					75	1.4%
Consultant, industry, company	172	2.8%	154	4.6%	443	8.3%
University	175	2.8%	186	5.6%	132	2.5%
Tribal			14	0.4%		
High School					19	0.4%

In addition to data dissemination online, project participants also responded directly to requests for data or assistance in locating data (Tables 3, 4 and 5). PSMFC StreamNet followed a policy of responding to all data and assistance requests within one business day, although occasionally complex data requests may take several days to fill. In previous years, several participating agencies reported that the volume of direct data requests has been increasing significantly to the degree that it is taking time away from work formally required under the Statement of Work. This year, the volume of direct requests decreased in several agencies, possibly a sign of increased efficiency through technology. PSMFC StreamNet has been receiving fewer direct requests since the website was redesigned in FY-09. Requests from IDFG declined this year, possibly because of direct access to data from IFWIS for IDFG employees. CRITFC reported a decline in requests at the library, possibly due to the increased number of scanned documents now available online. ODFW also reported a decrease in the volume of requests, a change from the previous trend.

Table 3. Information requests served in FY 2011 by each StreamNet partner, by type of organization making the request.

Request from	CRITFC	IDFG	MFWP	ODFW	WDFW	PSMFC
College/university	390	0	1	1	0	7
Government, federal	444	12	6	12	0	9
Government, state	475	48	67	209	11	6
Government, tribal / Tribal organization	1,593	10	0	0	0	4
Government, county/local	23	0	1	5	0	4
Nonprofit	38	0	2	7	0	0
Industry / commercial	213	0	2	2	0	5
Private consultant	450	4	4	7	0	11
Regional entity	339	0	0	1	1	1
Watershed council/group	32	0	0	0	1	1
General public	685	1	0	17	0	0
Unknown	a	2	5	2	1	0
Total	4,682	77	88	263	14	48

a. Included in the General Public category

Table 4. Information requests served in FY 2011 by each StreamNet partner, by type of request.

Request type	CRITFC	IDFG	MFWP	ODFW	WDFW	PSMFC
Citing StreamNet / permission	25	0	0	1	0	1
Data request	0	36	9	16	11	11
General fish information	15	0	3	3	0	1
GIS data / map	0	20	58	113	2	9
Hardware / software technical support	0	12	10	84	0	0
Help finding information	726	1	3	13	0	7
Help with data interpretation / analysis	0	3	2	9	1	6
Help with data structure	0	4	2	4	0	0
Report error or problem	35	0	0	0	0	7
Library / documents	3,756	1	1	5	0	1
Information outside StreamNet's scope	125	0	0	5	0	0
Other		0	0	10	0	5
Total	4,682	77	88	263	14	48

Table 5. Outcome of information requests received in FY 2011 by StreamNet partners.

Outcome	CRITFC	IDFG	MFWP	ODFW	WDFW	PSMFC
Could only refer to other source	250	0	2	17	0	5
Request fully satisfied	4,157	67	80	200	11	35
Request partially satisfied (may include referral to other sources)	250	10	6	28	3	8
Could not help at all	25	0	0	11	0	0
Response pending	0	0	0	7	0	0
Total	4,682	77	88	263	14	48

Specific data dissemination activities by all project participants in FY-11 included:

Project	Accomplishments During Fiscal Year 2010, Work Element 161: Disseminate Raw/Summary Data and Results
CRITFC	We continued to provide information and library services to an ever growing customer base. We provided electronic documents on demand within copyright restrictions.
FWS	Since FWS is specialized in providing only hatchery related data to StreamNet, it does not directly disseminate data other than through exchange of data to the StreamNet database. FWS did contribute to this work element by providing feedback on the main StreamNet website and evaluation of the new data query approach.
IDFG	IDFG used and provided feedback on the StreamNet website on a regular basis. IDFG StreamNet personnel fielded and completed a total of 77 direct requests for data and assistance. This is significantly fewer direct requests than in previous years, much of which can be attributed to two things: 1) the ability to now go directly to the IFWIS website and find much of the requested data, and 2) IDFG's ability to submit data to the central StreamNet database earlier and to expand its data holdings in the StreamNet database because of IFWIS. IDFG promoted the StreamNet project by providing services to a wide range of people. We also identified StreamNet as a major partner of IFWIS. The IDFG StreamNet project manager presented a paper at the 2011 American Fisheries Society Conference in Seattle about IFWIS, which identified StreamNet as a primary partner.
MFWP	The StreamNet website was used and queried, and feedback provided to PSMFC as needed. Data from Montana StreamNet were disseminated through the CAPS application and other MFWP websites. Several independent datasets were uploaded to the data store using the new data publishing tool. Issues encountered with the data store upload were relayed to StreamNet staff and quickly remedied. There were 88 fisheries requests received and responded to this year.
ODFW	Oregon StreamNet provided functionality-related feedback to Regional StreamNet staff throughout the year. We managed ODFW websites and interactive map applications to improve agency data flow to users and to StreamNet. We enhanced data access by providing updated fish passage barrier datasets, and several other datasets to ODFW GIS users. Responses to requests for data and information were reduced from the last few years. Staff attended the ODFW statewide Fish Biologist meeting and promoted StreamNet data types and activities.
Region	The StreamNet website remained the primary vehicle of disseminating data from the StreamNet databases, with site reliability above 99.5%. 48 direct requests for data or assistance were received and addressed. Two staff members participated in professional meetings to promote the information that is available through the project.
WDFW	During this period, WDFW StreamNet staff responded to 14 data requests. In a more general sense, our agency continued with efforts to make all fish data available though our web-based Salmon Conservation Reporting Engine (SCoRE) . Additionally, we assisted PSMFC in website improvements through discussions at the Steering Committee meetings.

Work Element 189: Coordination

Coordination with other agencies and regional entities was a major emphasis in FY-11. These activities primarily addressed actions in support of the Coordinated Assessments project, which represents a unique collaboration among the state and tribal fisheries management agencies, regional scale users of data, federal agencies, and regional collaboration and coordination groups like PNAMP and CBFWA. This project is providing an opportunity to develop a regional consensus on data priorities which in turn will help guide StreamNet's data and technical services actions into the future. The project also remained active in PNAMP and CBFWA. Coordination activities by the project participants were as follows:

Project	Accomplishments During Fiscal Year 2010, Work Element 189: Coordination-Columbia Basinwide
CRITFC	The library coordinated with agencies and other libraries throughout the basin to ensure that customers were provided with the latest and best information on fish, wildlife and water in the Columbia Basin.
FWS	FWS conducted routine coordination between the project and the Columbia Project Office of FWS.
IDFG	IDFG StreamNet personnel participated in discussions and workshops for the Coordinated Assessments pilot project. Idaho StreamNet personnel worked with IDFG representatives to identify data needed for high level indicators. Project personnel helped hire and supervised data technicians for Coordinated Assessments. IDFG StreamNet personnel participated with federal and state agencies, tribes, and private industry to provide data and help build data systems that feed the StreamNet database.
MFWP	StreamNet staff members have been very active in the scoping and development of the agency wide centralized survey and inventory information system. Many data types have been scoped and several pieces of the system are nearing completion. Mapping is being integrated and work continues on the 24k NHD at a regional level. Staff members continued to meet with the fish bureau to collaborate and provide guidance. Staff continued participating in the Western Governors' Association pilot project with Idaho which relates directly to the use of StreamNet data from both states.
ODFW	ODFW StreamNet was able to provide significant support to the Fish and Wildlife Program (FWP), with the most time consuming portion related to the Coordinated Assessment work. Four technicians worked in Oregon, with two embedded within ODFW, one with the Confederated Tribe of the Warm Springs, and one with the Umatilla Tribe. Excluding the Lower Columbia, 98 Data Analysis Flow Diagrams were created, 20 metadata records were completed, and 98 Data Exchange Templates were populated. Summaries of agency/tribe gaps, needs, and priorities were also developed for all populations that were examined. We placed considerable focus on partnering with other data source agencies to significantly enhance the content and collaborative stewardship of Oregon's fish passage barrier and distribution datasets. We also gave significant attention to supporting CBFWA's SOTR report this year, updating all SOTR data summaries contained in the StreamNet data system and responding to specific data requests as needed. Coordination of Oregon's data and data management efforts is taking an increasing amount of time, but continues to pay dividends as more agency staff are supporting and seeking improvements within their respective Programs. The development of a decision support system in Oregon, along with the coordinated assessments, monitoring and evaluation, and recovery planning efforts are placing a greater emphasis on improving data management.
Region	Coordination with other projects, agencies and regional groups was a major activity this year. In addition to our normal coordination, we expended significant time working with the Coordinated Assessments project that was led by PNAMP and CBFWA. StreamNet played several roles, including participating on the core planning group for the project, assisting with development of the Data Exchange Template, and conduct of the initial test data acquisition exercise by hiring and supervising ten temporary data technicians to work within eleven state and tribal fisheries management agencies to locate the selected data, characterize how those data flow within the agencies, acquire available representative test data, and help the agencies evaluate gaps and needs in their ability to provide the data. A key result of this effort for StreamNet is a change in data priority to place higher emphasis on the derived Indicator estimates and supporting Metrics and metadata for the Coordinated Assessments, and increased support to the agencies for developing internal data management systems to more efficiently share data.
WDFW	Highlights of WDFW coordination efforts this year included participation in the Coordinated Assessments project as well as the PNAMP Integrated Status and Trends Monitoring effort with Oregon. Additionally, WDFW maintained communications between StreamNet and other applicable regional, federal, tribal, private and state-level agencies and activities beyond the Council's Fish and Wildlife Program to identify means for collaboration on data capture and management. On request or as possible, WDFW joined with other agencies in working toward the capture of data not currently being entered in StreamNet. We continued to work with the Northwest Indian Fisheries Commission to develop a client side application for use by tribal entities to enter data into the JMX.

Work Element 119: Project Administration

Routine project administration was successfully accomplished throughout the year by all project participants. All participated in the quarterly Steering Committee meetings to provide guidance and oversight, and in quarterly meetings of a Technical Group made up of the data specialists in the project. The Steering Committee meeting schedule was modified this year to mesh better with the NPCC Category Review of the regional database projects. The FY-12 Statement of Work and budget were developed and submitted to BPA, and development of a new project proposal for FY-13-17 was begun in preparation for the Category Review, which was moved back to FY-12. Other routine project management activities accomplished by all participants during the year included personnel supervision, budget tracking, and project reporting. In addition to these general activities by all participants, additional unique details were as follows:

Project	Non-routine accomplishments During Fiscal Year 2011, Work Element 119: Manage and Administer Projects
CRITFC	The CRITFC StreamNet project performed all routine project management functions.
FWS	The FWS StreamNet project performed all routine project management functions.
IDFG	Idaho StreamNet performed all routine project management functions. Supervision was provided to the IDFG temporary data specialist for the Coordinated Assessments project.
MFWP	Montana's participation in StreamNet Steering Committee meetings was somewhat reduced this year due to the strong focus on anadromous species under the Coordinated Assessments. The longstanding Montana StreamNet project leader retired at the end of the fiscal year, and the Data Manager was appointed interim leader until the position is officially filled.
ODFW	ODFW StreamNet experienced significant staff turnover this fiscal year; at one point having a 66% vacancy rate. Most vacancies were filled with temporary staff as ODFW worked out hiring policies given the State's economy. Once again, we were able to hire two StreamNet Data Technicians. We also hired two Barrier & Distribution GIS Analysts using a combination of StreamNet and other funds. A third Data Technician was hired to focus on recovery planning data efforts. Attempts to fill our Application Developer/Database Manager position, which was vacated in February, were not successful. The only suitable candidate declined the position. Oversight was provided for the two Coordinated Assessments data specialists in ODFW along with coordination with the two other data specialists in Oregon tribes.
Region	In addition to routine project management, StreamNet took on the role of hiring and supervising a team of data specialists to conduct the initial data location and data sharing capacity evaluation work for the Coordinated Assessments project. Ten specialists were hired for five months and were stationed one each with Idaho Fish and Game, the Nez Perce Tribe, the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Warm Springs Tribes. Two specialists were hired for Washington Department of Fish and Wildlife (Vancouver and Wenatchee) and Oregon department of Fish and Wildlife (Corvallis and La Grande). A single specialist was hired for both the Confederated Colville Tribes and the Shoshone-Bannock Tribes. General guidance was provided to the technicians, with local on site supervision coming from the agencies they were working with. The technicians served to locate the required types of data in the agency by population, characterize how the data flow for each population on a Data Analysis Flow Diagram, obtain representative data for populations where the data were readily available by filling in a Data Exchange Template spreadsheet, and assist the agency in identifying gaps and needs that limit flow of the data. This effort was completed successfully and on time.
WDFW	Washington StreamNet performed all routine project management functions. Supervision was provided to the WDFW temporary data specialist in Vancouver for the Coordinated Assessments project.

Work Element 132: Annual Report

All project participants, including CRITFC, summarized their project activities from FY-09 and provided them to the StreamNet Program Manager at PSMFC. All input was consolidated into the 2009 Annual Report, which was uploaded to Pisces during the first quarter of FY-11. The report is available on Pisces or at the StreamNet website on the StreamNet Documents page (http://www.streamnet.org/reports_pubs.cfm).

Work Element 185: Produce Pisces Status Report

All project participants contributed to quarterly Status Reports by entering their activities directly into Pisces, except that CRITFC reported on a monthly basis, as agreed within their contract. PSMFC submitted the Status Report for the rest of the project participants, with the report submitted by the 15th of each month following the end of the quarter, except for the fourth quarter report, which was submitted on the last day of the quarter, September 30, 2011.

Appendix A
Detailed Project Accomplishments by Individual Work Element Title

Work Element 159: Transfer/Consolidate/Regionally Standardize Data

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 1 **Conduct site visits to obtain updated data from biologists**

Description: Conduct scheduled site visits to offices of biologists in state, tribal and federal agencies to obtain the most recently available field data. This approach to acquiring data is used by only one of the agencies cooperating in the StreamNet project.

Deliverable: New data are obtained by the MFWP StreamNet project to update the data categories listed in the other Data Development work element titles.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
MFWP	Montana StreamNet staff completed the scheduled visits with the biologists and data were collected for all regions.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 2 **Develop anadromous fish distribution data**

Description: Document the occurrence, distribution and life history characteristics of anadromous fish species. These data will be georeferenced to the StreamNet mixed scale hydrography, with intent to migrate to 24K when a regionally consistent 24K routed hydrography becomes available. Maintenance of this high priority data set will continue. The state StreamNet sub-projects will maintain the existing data on anadromous fish distribution and habitat use in their respective states. New distribution information will be incorporated as they become available. Updated distribution data will be converted to the regional Generalized Fish Distribution format and conveyed ("exchanged") to the regional StreamNet database at PSMFC, where they will be incorporated into the database.

Deliverable: Data on the distribution and habitat use of anadromous fish are maintained, and updated as possible, by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC and made available through the online data query system and interactive maps.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
IDFG	IDFG compiled spring/summer Chinook salmon generalized fish distribution information from Idaho Fish and Wildlife Information System (IFWIS) databases. The distributions were submitted to PSMFC for inclusion in the central StreamNet database.
ODFW	Routine maintenance of the distribution data was performed as needed. Data from numerous originators including multiple ODFW monitoring projects, USFS, BLM, Siletz and Grande Ronde tribes were compiled and converted into the Oregon Fish Habitat Distribution Data Standard (OFHDDS). Efforts were focused on identifying and integrating habitat data outside of previously compiled data and included additions (miles) to coho (297), steelhead (164), green sturgeon (66) and pacific lamprey (3,931) habitat. Distribution data extents were adjusted as part of data quality assurance efforts in relation to fish passage barrier data. The scope of the OFHDDS was revised to include historical habitat distribution. Plans are to exchange the distribution data in the second quarter of FY-2012.
WDFW	Historically, conversion & submittal of Fish Distribution to StreamNet has been problematic. Initially WDFW's format was radically different from StreamNet's format and posed the biggest problem but it was surmountable. Currently the formats are very close because WDFW changed their format, yet now WDFW has internal data flow issues so more than one fish distribution and hydrological model in use. The Location Data Manager is cautious on how to approach StreamNet submissions which require greater accountability with StreamNet's FishDist.RecordID and attention to cross-state border issues. To aid subsequent submissions of FishDist, the Location Data Manager will use the steps she created to convert and submit the mixed scale hydrography (MSH) routes. The MSH process has been tested, proven to be efficient and at heart addresses both (1) the need for track-ability and (2) how to cope with both moving from one measure system &/or line work to another.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 3 Develop resident fish distribution data (top priority for MFWP, lower priority for others)

Description: Document the occurrence, distribution and life history characteristics of resident fish species, at the most current available hydrography scale. Existing resident fish distribution will be maintained, and project participants will begin expanding data for additional species. This is high priority for Montana, and new data will be developed by the other states as time allows. Updated distribution data will be exchanged to the regional StreamNet database at PSMFC, where they will be incorporated into the database.

Deliverable: Data on the distribution and habitat use of resident fish (species of primary interest) are maintained, and updated as possible, by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC and made available through the online data query system and interactive maps.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
IDFG	Survey data for northern leatherside chub and bluehead sucker were georeferenced and entered into the IFWIS databases in preparation for range-wide status assessments. IDFG submitted updates to PSMFC for Shoshone sculpin generalized fish distribution for inclusion in the central StreamNet database.
MFWP	Over 2,500 resident fish distribution records were created, edited and exchanged with StreamNet. The Yellowstone Cutthroat Trout assessment database was updated. A web-based data reviewer was published by MFWP to allow biologists to view the historic assessment data and prepare them for making edits. Updates were made using remote meeting technology due to MFWP travel restrictions. Assessment data were made available publically through the StreamNet Data Store.
ODFW	Existing, observation-based digital redband data were compiled from ODFW, USFS, BLM, and OSU and converted into the Oregon Fish Habitat Distribution Data Standard (OFHDDS). Data were compiled for the entire range of redband within Oregon with the exception of the closed basins and the upper Deschutes, which had been compiled previously. Additionally, opinion-based data were developed through a process of map creation, review and input from ODFW biologists in the Mid-Columbia, Umatilla, John Day, La Grande, Wallowa, Klamath and Southeast fish districts. Summer steelhead habitat was also used to identify redband presence within the range of anadromy. A total of 9,147 miles of redband habitat were described and added to the OFHDDS database. Plans are to exchange the distribution data in the second quarter of FY-2012.
WDFW	WDFW fish distribution data flow stalled since the previous stewards left WDFW in 2007. StreamNet submissions are dependent on WDFW's progress. Periodically, the current WDFW GIS Unit staff worked on developing the WGA Decision Support System (WGA DSS) redband distribution data. The redband work is a different format (&/or species split) than WDFW normally maintains. As such, WDFW's finalization of the data stalled in Spring 2011 because of (1) uncertainty in the best internal format to maintain (how the data would/would not replace existing Rainbow representations) & (2) how to be consistent with Idaho and Oregon conventions. To help the effort, we commenced email discussions with the WDWF Compiler and StreamNet counterparts to learn issues relevant to Item 2. Seemingly WDFW has enough information regarding Item 2 yet finalization & subsequent StreamNet submission is still pending while WDFW resolves Item 1.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 4 Develop data for adult abundance in the wild

Description: Develop and maintain (update all annual trends) information on adult abundance for native fish species, resident and anadromous, including escapement, redd counts, peak spawner counts, trap counts, dam and weir counts, and resident fish populations (where calculated by other agencies). This is a high priority data type. Also included in this data category are data gathered during spawning ground surveys regarding straying of hatchery fish onto spawning areas, i.e., marked/unmarked ratio and age and sex composition. These are lower priority under level funding. Updated data will be exchanged with the regional StreamNet database at PSMFC at least once per year in the Data Exchange Format (DEF).

Deliverable: Data on the abundance of fish (primary emphasis on focal species) in the wild are maintained and updated by each of the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
IDFG	IDFG compiled spring/summer Chinook salmon index redd counts from the IFWIS Spawning Ground Survey database. The data were converted into the StreamNet data exchange format and submitted to PSMFC for inclusion in the central StreamNet database. 2010 US Forest Service spring/summer Chinook salmon redd counts were obtained and entered into the IFWIS Spawning Ground Survey database and submitted to the central StreamNet database.
MFWP	2,226 survey locations, >15,000 survey records and >100 trend records were added or updated and exchanged.

ODFW Data compilation, trend updates, & QA/QC efforts for adult abundance trends continued throughout the year. Focus continued to be redirected to obtaining data supporting focal species in the SOTR in all Columbia subbasins. 1,994 Status of the Resources "Focal Species Trends" were added or updated (of which 298 Trends are used directly in the Status of the Resources Report). Staff also dedicated time to linear referencing 486 trends in the Grande Ronde and Imnaha basins for stream survey locations (redds and spawner counts) and obtaining current data for trends not updated in recent history. Updates were submitted to Regional StreamNet staff in April and September, as scheduled, totaling 2,056 trends (8,925 escapement data records) added or updated. These trends were in the following data types: Adult Return-Dam/Weir counts, Adult Return-Estimates of Spawning Population, Adult Return-Redd counts, and Adult Return-Peak/Other Spawning Counts. These updates ranged in years from 1945 to 2011. The year's work brings the total number of Oregon abundance trends to 9,640 spanning the years 1938 through 2011.

WDFW This year, the Vancouver data compiler made changes and additions to the 2009 & 2010 natural spawner escapement estimates recently submitted at the end of June. These changes were sent to the PSMFC Data Manager for submission to the website.

During the past year, the Olympia data compiler has been migrating historical data from spreadsheets held by WDFW regional biologists for adult steelhead and Coho trapping on the North Fork Toutle River. Trapping was done from the fish collection facility on the North Fork of the Toutle River. Adult data 1977 - 2010 from the Kalama River adult trap were migrated from spreadsheet to a normalized database. In order to facilitate the transfer of data to the proposed DEF for juvenile trapping data, historical data for four juvenile traps in the Wind River Basin are currently undergoing a normalization process and will be merged into draft format for a statewide database. The Upper Columbia data compiler submitted 2010 escapement data and data for juvenile steelhead distribution were submitted.

The SGS (Spawner Ground Survey) database was upgraded for more efficient data entering. We reviewed and commented on these changes, improvements and workability. The Vancouver data compiler entered data and made changes to updated survey cards and has been working with biologists on a way to use the SGS database to incorporate more of Region 5's fish snorkel survey data and how to change the data entry tool. 2010 SGS data entry was started, but then a template was completed for technicians to enter data into the SGS format, for future uploading into the SGS database, after the Vancouver compiler QA/QC's the data.

The Vancouver data compiler spent the majority of the fourth quarter wrapping up 2010 natural spawn escapement data collection. The compiler finished collecting the data, proofed the data from the bios and added it to DEF standards for submission to StreamNet before the deadline.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 5 **Develop hatchery return data**

Description Develop (update) and maintain hatchery trend information on the return, disposition and straying (e.g., from other hatcheries) of adult fish returning to hatcheries, including information on coded wire tags. This is an anadromous related task only. Priority will be placed on updating total return and egg take data through 2009. Development of disposition data is lower priority and would require additional resources. Updated data will be exchanged with the regional StreamNet database at PSMFC at least annually. This is a CBFWA Priority 2 data type.

Deliverable Data on the return of anadromous fish to the hatcheries are maintained and updated by the states and FWS StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

FWS 2010 hatchery return information for Columbia River hatcheries participating in the CRiS database were submitted to regional StreamNet along with revised data for previous years.

IDFG IDFG extracted 2010 hatchery return data from IFWIS. The data were formatted into the StreamNet data exchange format and submitted to PSMFC for inclusion in the central StreamNet database. IDFG worked on compiling and reconciling historical Snake River sockeye data and entering them into the IFWIS database for eventual submission to the central StreamNet database.

ODFW Hatchery return data were not submitted in FY-2011. However, efforts were made to correct errors from the previous submission, and corrected records were resubmitted, including 13 new hatchery return trend records that were previously misidentified.

WDFW Hatchery Returns for the Washington Lower Columbia subbasins for 2009 were delivered, including all WA hatchery returns for 2009 where complete.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 6 Develop dam and fish passage facility data (mid-priority), update on 3 year cycle

Description: Data on dam and fish passage facilities will be maintained and updated only on a periodic basis. Previously compiled data of this type will be maintained. Information will be updated on a rotating schedule every three years, beginning in FY-08.

Deliverable: Existing data on dam and fish passage facilities are maintained. This lower priority data set will be updated and exchanged with the main StreamNet database at PSMFC this fiscal year (FY-11) on the three year rotating schedule.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
IDFG	Per our milestone for dam and fish passage facilities, IDFG maintained existed data, but did not actively pursue any new data and no new data were provided to us.
MFWP	Data on dams and fish passage facilities was maintained, but no changes or updates occurred during the year.
ODFW	Dam facility data were compiled from numerous sources including ODFW (571 records), Oregon Dept. of Forestry (6), Scappoose Watershed Council (12), Benton Soil and Water Conservation District (5) and the Nez Perce tribe (13). The data were converted into the Oregon Fish Passage Barrier Data Standard. All dam facility records were then converted into StreamNet format, assigned StreamNet mixed scale hydro specific measures and submitted to the StreamNet database at PSMFC. A total of 2,504 dam facility records were submitted to StreamNet, replacing the existing table. Also submitted were 2,504 DamXDamPurpose and 2,504 DamXDamType table records.
WDFW	No work was performed this fiscal year. Data will be submitted in FY-2012.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 7 Develop hatchery facility data (key dataset), update on 3 year cycle

Description: Develop and maintain information on anadromous and resident hatchery facilities, including information on location, design, management and authorization. Information will be updated on a rotating schedule every three years, beginning in FY-07.

Deliverable: Data on hatchery facilities are maintained by the state StreamNet sub-projects. Updated data are exchanged with the main StreamNet database at PSMFC on three year rotating basis, with a full updated scheduled in FY-2013.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
FWS	A copy of the current hatchery facility file, National Fish Hatcheries on the West Coast, was submitted to regional StreamNet.
IDFG	Hatchery facility information was updated in the IFWIS databases. The updates were submitted to PSMFC for inclusion in the central StreamNet database.
MFWP	Hatchery facility data was maintained, but no changes or updates occurred during the year.
ODFW	No hatchery facility records were scheduled to be submitted this fiscal year. Oregon's dataset was updated to reflect the merger of the Oakridge hatchery with the Willamette hatchery, which occurred a number of years ago but had been missed, and to show that the Butte Falls hatchery is no longer in operation.
WDFW	The Location Data Manager developed data for the hatchery action attributes (AdultCap, Spawn, Hatch, Rear, Acclimate, Release) and submitted the data. Other hatchery table attribute updates will be sent in subsequent submissions. The location fields for the USFWS Hatchery facility were also updated. Changes were just to reflect new measures due to changing the datum used by the internal management layer.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 8 Develop hydrography data, including stream, lake and reservoir layers

Description: Archive the regionally consistent routed hydrography layer at the 1:100,000 (100K) scale for which StreamNet is the official keeper, and adopt use of the Mixed Scale Hydrography for depicting StreamNet data. In FY-10 the 100K hydrography will be archived but not updated, although it will still be available for use. Emphasis this year has shifted to the StreamNet Mixed Scale (100K plus 24K streams that have attached fish data) Hydrography as a step toward the eventual conversion to 24K when a regionally consistent routed 24K hydrography becomes available from other entities. Effort will also be expended toward developing 24K LLID based hydrography from NHD linework. The lakes and reservoirs layer will also be maintained. These are essential data for georeferencing all our other data.

Deliverable The 1:100,000 PNW hydrography layer and lakes layer are maintained and archived for use a by others. The new StreamNet "mixed scale" (100K X 24K) hydrography is used for georeferencing StreamNet data until a fully routed PNW 1:24,000 scale NHD is completed by USGS.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

IDFG Using non-StreamNet funds, IDFG added new streams to the 1:100,000 scale StreamNet hydrography as requested by agency biologists. IDFG started work on migrating the current 1:100,000 scale Idaho StreamNet whole-stream routing system to the 1:24.000 scale National Hydrography Dataset, also on other funding.

MFWP Updates to the StreamNet mixed scale hydrography were submitted as part of the annual data exchange. Coordination between MFWP and the Montana Resource Information System (MT NRIS) on Montana's hydrography continued throughout the year. Montana StreamNet staff is continuing to work with NRIS staff on assigning whole stream identifiers to the 1:24,000 NHD. Several different approaches have been tested throughout the year by both MFWP and NRIS staff.

Many lakes and streams have been added to MFWP internal hydrography due to the centralized survey and inventory database currently in development.

ODFW Enhancements were made to Oregon's Mixed Scale Hydrography dataset in order to support fish passage barrier and fish habitat distribution data. A total of 6,287 stream features were added to the Mixed Scale Hydrography dataset and submitted to StreamNet. A corresponding number of LocMaster table records were also submitted. Prior to submission, quality assurance reviews of the stream features were conducted. Location type and subtype coding as well as tributary name, ID and measure information were attributed to the stream features. Coordination with regional StreamNet and other state GIS staff involved strategies for developing and maintaining whole stream identifiers on the NHD geometry.

WDFW The Location Data Manager drafted NHD line work for HUC 1707 (Walla Walla) and submitted this first draft to ODFW for comment on cross-border and Oregon streams.

Upon a request from the StreamNet Regional GIS manager, we re-submitted a polygon layer for the catch areas georeferenced in WDFW data. For this request we improved the attributes tied to the original geometry. A subsequent StreamNet update will follow after WDFW officially adopts a corporate layer and we can revise the StreamNet polygons if warranted.

The locations manager also started georeferencing existing lake bathymetry to the lakes layer. Her effort defined the necessary steps and a time-estimate for completion (about 15 minutes per map).

For stream work, the location manager improved the georeferencing process that relies on Stream Catalog Codes, re-organizing the LUX_Catools file for joining files with different formats of the stream catalog code. She is awaiting adoption of the Grande Ronde and Walla Walla stream updates already submitted before moving any data to the updated hydrology.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 9 Develop fish barrier data, update on 3 year cycle

Description Develop and maintain data sets for barriers to fish migration. Delivery of this new data type will be on a rotating basis every three years beginning in FY-09. Efforts in FY-11 will focus on maintaining existing data.

Deliverable Data on fish barriers are maintained by the state StreamNet sub-projects. Updated data will be exchanged with the main StreamNet database at PSMFC in FY-12 on the 3 yr rotation schedule.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

IDFG Per our milestone for barrier data, IDFG maintained existed barrier data, but did not actively pursue any new data and no new data were provided to us.

MFWP Existing barrier data were maintained; 445 barrier records were added or updated.

ODFW Efforts continued this year to incorporate new barrier information into the ODFW-stewarded Oregon Fish Passage Barrier Data Standard (OFPBDS) database. Data from ODFW's Aquatic Inventory Project, the Oregon Dept. of Forestry, and Nez Perce Tribe were incorporated. Once data were converted into the standard database format, they were analyzed for potential duplication with pre-existing features and were also compared against the Oregon Watershed Restoration Inventory to ensure that their passage status reflects any restoration work that may have occurred after the data were inventoried originally. The barrier features were then linear referenced to the mixed scale hydrography. An updated Barrier dataset with 27,860 features along with metadata were published to the ODFW website in February 2011. The OFPBDS database was queried for complete, partial or unknown barriers and single features at multiple feature sites were derived. The data were converted to the StreamNet exchange format and StreamNet mixed scale hydrography event measures were assigned. A total of 21,257 Barrier table records were delivered along with metadata to Regional StreamNet. We anticipate exchanging the Fishbarrier table and some distribution data in the second quarter of FY-2012.

WDFW No compiling work on fish barriers was done this fiscal year since it was not scheduled for this year.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 10 Develop fish age data

Description Develop and maintain information on age/sex composition of returning adults, primarily for anadromous species. This is a CBFWA Priority 2 data type.

Deliverable Data on age composition of returning adult fish is available through the StreamNet website.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
CRITFC	Fish age data in FWS is still in process for FY-2010 and FY-2011, so no exchange was possible in FY-11.
FWS	2010 hatchery return Age information for Columbia River hatcheries participating in the CRiS database were submitted to regional StreamNet along with revised data for previous years.
IDFG	Age composition data for 2010 spring/summer Chinook salmon returns were obtained from the IDFG post-run age analysis data. The data were converted into the StreamNet data exchange format and submitted to PSMFC for inclusion in the central StreamNet database.
ODFW	Existing age data were maintained. No updates were required this year. New data were not made available during this fiscal year.
WDFW	The Vancouver compiler made changes and additions to the 2009 natural spawner age estimates recently submitted at the end of June. These changes were sent to PSMFC for submission to the website. Age data for 2010 Lower Columbia Tributaries were collected and calculated. New memos were created for references and will be sent to the library when the data are submitted. The Data Manager delivered age data for hatchery returns from the focal populations in the 10 Washington Lower Columbia subbasins. We submitted 2010 Lower Columbia tributary age data with natural spawn escapement data to PSMFC by the deadline.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 11 Develop other data sets

Description On an opportunistic basis, develop other types of data as available or as requested by FWP participants. This relates to data relevant to StreamNet objectives which would be developed by StreamNet cooperators and also includes data developed by other agencies or projects. Actual acquisition, standardization, georeferencing and distribution of these data will be dependent on available time and funding. These data may be included in the main StreamNet database in the future, or may be obtained and distributed as independent data sets in native format in the Data Store. Priority for development of other data by StreamNet varies depending on the data type for each participating agency. Receiving and posting independent data sets from other entities in the Data Store is a high priority.

Deliverable Other fish related data (in addition to the standard StreamNet data categories) are obtained, preserved and made available through the StreamNet website as they become available on an opportunistic basis. Data sets that do not fit into the StreamNet data exchange formats are posted as independent data sets in their native format in the StreamNet Data Store.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
CRITFC	During FY2011, Columbia River Inter-Tribal Fish Commission did not identify any new data categories for inclusion in the StreamNet database.
IDFG	IDFG did not submit any new data sets to the StreamNet Data Store.
MFWP	MFWP maintained and updated genetic and restoration project data throughout the year. 125 genetic sample locations and 184 sample results were added as well as 94 restoration projects. Genetics information was submitted to the StreamNet Data Store as an independent dataset and restoration projects were exchanged via the DEF. An angling pressure data layer was developed for inclusion in the Crucial Areas Planning System (CAPS) application. Potential revisions to the species of concern layer were proposed to biologists in the third quarter. Three different options were put out to the fisheries bureau for review and a decision will be made in FY-12. Final and contributing CAPS layer data were submitted to the Data Store. The data submitted included aquatic connectivity, game fish life history, game fish life history support areas, game fish quality, species of concern, unique fishing opportunities and native species on streams and lakes in western Montana.
ODFW	No requests were received to post independent datasets from Oregon. Updates to data sets obtained opportunistically, other

than those previously mentioned, were submitted along with other scheduled data exchanges, including 6 juvenile abundance trends (2003 - 2008) and 78 freshwater/estuary harvest trends (1956 - 2010). Because there is no DEF for juvenile abundance data currently, these data were submitted with the escapement trend data. Staff worked diligently to update and add 1,136 trends and approximately 19,000 EscData records related to sport catch data from punch cards for the Freshwater/Estuary Harvest category. The sport catch data was not submitted, pending resolution of issues involving sampling methods, calculation methods and supercodes.

Region

During fiscal year 2011, eleven new data sets were added to the Data Store. These data sets were the following, followed by the contributing entity in parentheses:

-- MFWP Crucial Areas Assessment Stream and Lake Values (MFWP)
-- Montana FWP Trout Genetic Sample Analysis Data 2011 (MFWP)
-- MFWP Population Surveys 2011 (MFWP)
-- Lapwai Creek water temperature data for 2010. (Nez Perce Soil and Water Conservation District)
-- Yellowstone cutthroat trout 2010 assessment review data. (Contains data updated at geographic management unit (GMU) meetings held in 2010.) (MFWP)
-- Meadow Creek Watershed Restoration - Temperature Data (Nez Perce Tribe)
-- Lolo Creek Watershed Restoration - Temperature Data (Nez Perce Tribe)
-- Yankee Fork Salmon River Restoration Project 2010 Water Quality Data (Shoshone-Bannock Tribes)
-- Yankee Fork Salmon River Restoration Project 2010 Water and Air Temperatures (Shoshone-Bannock Tribes)
-- Yankee Fork Salmon River Restoration Project 2010 Discharge Summary (Shoshone-Bannock Tribes)
-- Willamette - Lower Columbia Coastal Cutthroat Trout Habitat (ODFW)

This last data set is one that will eventually be incorporated into the main StreamNet database. However, in its present form it does not use the StreamNet hydrography. As such, it cannot be added to the StreamNet database at this time. Future work will convert this data set to StreamNet DEF format and this data set will be added to the main database and deleted from the Data Store.

Design and programming for the new Data Store output and Data Publishing Service input interfaces were finalized and completed, and these new systems were implemented live on the StreamNet web site during this fiscal year. Dawn Anderson of MFWP-StreamNet, Even Brown of IDFG-StreamNet, and Miranda Main of the Nez Perce Tribe assisted with user testing of the Data Publishing Service, and reported that it was straight-forward and easy to use. We thank Miranda for her assistance. As part of this effort the metadata and data files for the existing data sets in the Data Store were converted to the new metadata database; fields in the new metadata structure that did not exist in the old one were filled in. All people who had provided data sets using the old Data Publishing Service were contacted by email and asked to use the new one in the future. This new system meets Federal Geographic Data Committee standards for biological metadata, which the old system did not. The metadata fields used are a slight modification from the FGDC-Biological Data Profile, with modifications designed specifically for non-spatial biological data sets collected the Columbia River Basin. These modifications from the FGDC-BDP are documented.

For a number of years creation of a new federal metadata standard has been in process. During this fiscal year the new metadata standard, which is based on the North American Profile of the international standard, was adopted by the U.S. A biological profile, however, has not been completed. The National Biological Information Infrastructure, which is the federal agency that had been leading the metadata standard creation, was defunded by Congress and will cease to exist in January 2012. Because of this, the ability to create a new biological data standard for metadata will be delayed for a number of years. We thus plan to keep the StreamNet Data Store's metadata standard intact for the foreseeable future. Also as a result of the NBII's disappearance, the last of several national-level data set sharing facilities which we had cooperated has disappeared. The StreamNet Data Store, we believe, now becomes more important in sharing data sets for our section of the country because no alternatives are known to exist for our region.

WDFW

This year, WDFW spent quite a bit of effort developing internal data sets outside of the standard StreamNet data exchange format. In 2011, these datasets were:

-- SCoRE - WDFW's Salmon Conservation Reporting Engine. This constellation of databases is drawn largely from our Hatchery Assessment team's work, but will eventually include all major WDFW Fish Program datasets.

-- JMX - a statewide compilation of WDFW juvenile trapping data. This data set contains both raw measurements and final estimates, along with methods documentation.

-- Hatchery Adult returns - a corporate reporting database for hatchery returns.

-- Tagwire - WDFW tagging database.

-- WaDERS - WDFW Tag recovery lab database.

These datasets will eventually help to inform regional data exchanges like the Coordinated Assessments, the State of the Salmon and the Puget Sound Partnership Indicators.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 12 **Document data sources and help build the library collection (Library collection development)**

Description Under the PSFMC contract: StreamNet project participants will acquire documents, reports, publications and agency reports (gray literature) that document data sources for the data included in the StreamNet database or that relate to Fish and Wildlife Program activities and fish and wildlife resources in the Columbia Basin and the Pacific Northwest and submit them to the StreamNet Library at CRITFC for access by regional scientists, agencies, interested parties and other libraries.

Under the CRITFC contract: The StreamNet Library, with input from the other project participants, will develop a collection of materials applicable to the mission of StreamNet. We will collect, catalog and organize materials to document data sources, Fish and Wildlife Program activities and reports, and other gray literature for access by regional scientists, agencies, interested parties, and other libraries. The project participants and cooperators will submit reference documents for all data contained in the StreamNet database and Data Store to the StreamNet Library.

Deliverable The collection in the StreamNet Library is maintained and increased by addition of pertinent publications and reports and by reference documents supporting the data added to the StreamNet database.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC During FY2011, the library continued to grow as we added publications from various sources including donations of materials from our wish list of materials. In the last few days of FY-2011, we began receiving materials from the ODFW StreamNet Library which was housed at the Northwest Regional Offices in Clackamas, Oregon. We received 272 boxes of materials that will be absorbed into the CRITFC StreamNet Library's collections.

We received reference submissions from StreamNet participants and have loaded most of these records into the library catalog. We are working with the minimal level records to enhance them and add pertinent information as we are completing the inventory process. Those materials that fall within number ranges that have already been inventoried are given priority for full cataloging and record enhancement.

FWS A bibliography of publications on lamprey was forwarded to the StreamNet library.

IDFG References for all of the new data submitted by IDFG to the central StreamNet database were submitted to the StreamNet Library.

MFWP 376 reference records were added or updated in the fisheries library this year.

ODFW Oregon StreamNet submitted 731 new and updated reference records to the StreamNet Library this year related to data developed for WE 159 and quality assurance/quality control (QAQC) efforts, and ranged in years from 1914 - 2011. 131 were new documents to the StreamNet Library, the majority of which were related to Status of the Resource (SOTR) focal species, Coordinated Assessments (CA) and Integrated Status and Trends Monitoring (ISTM) projects. ODFW staff formally requested 65 documents or datasets in support of trend development for adult abundance. A considerable amount of time was spent performing QAQC on the OFDW reference database and material holdings. Approximately 1,000 reference records (10% of the total records) were formally reviewed, including all electronic or hard copy materials associated with each reference. This effort resulted in the identification of 144 duplicated records within the ODFW database, of which 73 were found to be duplicated within the StreamNet Library query system.

In August and September 2011, staff spent time at the ODFW Clackamas Library collecting reference materials from the archives and maintaining a bibliography database to document materials located for dissemination to the State Library and StreamNet Library. From their efforts, more than 16,000 references were delivered to the StreamNet Library for addition to their library collection.

Region A few reports and documents related to fish and wildlife resources were submitted to the StreamNet Library as they became available. 1,100 reference documents for data added to the StreamNet database this year were submitted to the library.

WDFW The Vancouver Data Compiler finalized memorandums created for 2010 natural spawn and age data collected and submitted to StreamNet. He submitted four new references to the StreamNet library.

Work Element: 159 Transfer/Consolidate/Regionally Standardize Data

Title: 14 **Obtain key VSP Indicators for the CBFWA Coordinated Assessments**

Description: If other resources become available (additional funding provided to the project through the BOG or other source, reassignment of existing contract funds, or other means) and with agreement from the BPA COTR, work with the fisheries co-managers (and any PNAMP contractors) to scope the availability of three key Viable Salmonid Population (VSP) derived Indicators (Abundance of Natural Spawners, Progeny per Parent Ratio, and Smolt to Adult Return Rate) to support the Coordinated Assessments in the Columbia Basin. The existence, storage location, format and availability of these data will be investigated and described for TRT and defined non-listed salmon and steelhead populations where they have been calculated by the agencies/tribes. Generalized data flow pathways and analyses will be diagramed or described, and the readily available estimates and their key supporting information will be obtained and compiled, as possible. Information will initially be compiled in spreadsheet or simple relational database format. This additional one-time work is dependent on sufficient funding being added to the project to cover temporary data technician time to work with the fish managers. This work is a scoping effort to describe the current state and availability of this information, and data acquisition will focus only on the readily available data and supporting information.

Deliverable: A description of the existence, location, format, completeness and availability of the three key VSP Indicators, including a 'level 2' generalized data flow diagram or map describing data pathways, organized by Technical Recovery Team (TRT) or other formally defined salmon and steelhead population. Where the estimates and related information are readily available, the data are obtained and compiled in a spreadsheet or simple relational database.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
IDFG	IDFG StreamNet worked with IDFG to develop the DET for the Coordinated Assessments. We participated in interviews for IDFG, Nez Perce Tribe and Shoshone-Bannock Tribes CA data technicians. IDFG StreamNet provided assistance and oversight to compile existing indicator data for the three indicators for Chinook salmon, sockeye salmon and steelhead. The data were entered into the DET. Data flow diagrams were built for each indicator, population and species combination. We provided assistance to the Nez Perce Tribe and Shoshone-Bannock Tribes in their efforts to compile CA indicators. We participated in CA meetings to report progress and final reports, and develop the continuing CA strategy.
ODFW	Four technicians worked in Oregon, with two being embedded within ODFW, one with the Confederated Tribe of the Warm Springs, and one with Umatilla Tribe. Excluding the Lower Columbia, 98 Data Analysis Flow Diagrams were created, 20 metadata records were completed, and 98 Data Exchange Templates were populated. Summaries of agency/tribe gaps, needs, and priorities were also developed for all populations that were examined.
WDFW	This year WDFW participated in the Coordinated Assessments workshops and successfully diagramed data flow for major blocks of the VSP indicator supporting data for Washington SaSI populations. Though this effort is ongoing, where possible WDFW leveraged ISTM co-efforts to compile supporting data into relational databases which will inform the Coordinated Assessment VSP indicators when their final structure is determined.

Work Element 160: Create/Manage/Maintain Database

Work Element: 160 Create/Manage/Maintain Database

Title: 1 **System administration**

Description: All StreamNet cooperators will manage and maintain the computer systems (hardware and software) necessary for acquiring, quality checking, formatting in regionally consistent format, georeferencing, backing up, and transmitting tabular and GIS data to the StreamNet database at PSMFC, and for storing, managing, documenting, backing up, quality checking and disseminating the data at PSMFC. This is a high priority work element that is essential to proper functioning of the project, even though it operates largely in the background.

Deliverable: The computer systems used to obtain, store, manage, back up, and distribute data (hardware and software) are maintained in functioning condition and updated as needed at PSMFC and the cooperating agencies.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
CRITFC	Our computer systems functioned within expected parameters. The servers at CRITFC were backed up on a regular basis and we maintained three different back ups for the StreamNet Library information.
FWS	FWS IT staff maintained needed infrastructure for StreamNet activities within FWS.
IDFG	Using non-StreamNet funds, IDFG provided regular server administration and database backups for all the servers used by IDFG StreamNet. IDFG StreamNet personnel also worked with IDFG and State of Idaho Department of Administration personnel to debug and improve Internet access and speed issues.

MFWP All computer systems were maintained throughout the year. MFWP StreamNet staff have continued to troubleshoot the ArcGIS Server and SDE installations. Production and test ArcGIS environments have been implemented and the SDE development environment is being prepped for migration to production. MFWP has migrated off the NRIS GIS servers and has implemented a development SDE environment. MFWP has started the process of migrating desktop GIS users to ArcGIS 10. Migration of Server and SDE will likely occur in the first quarter of 2012.

ODFW Oregon StreamNet performed routine system maintenance and upgraded hardware and software as needed. We were able to solidify the backup process for our virtual development and production server environments. Needed service packs were also installed as necessary to ensure proper functionality. Also, one replacement laptop computer was purchased.

Staff worked with Regional StreamNet to gain access to the SQL copy of the StreamNet database to allow greater QA/QC capability.

ArcGIS server, ArcIMS and ArcSDE 9.3.1 were installed on our virtual servers, and compatibility issues with ArcGIS 10 were addressed. Considerable time was spent coordinating the upgrade to ArcGIS 10 on agency client machines, and we developed training resources for staff. Permissions, installation, and other lingering issues took significant time to resolve. Staff installed version 11.6.1 of the Flex LM license manager on the development map server and configured it to support the use of ArcGIS 10 licenses.

We continued providing GIS license support to several dozen staff throughout the year, and completed the process of coordinating agency GIS license deployments for the next Enterprise License Agreement between the state and ESRI. We also researched alternative mobile GIS options and the capabilities and limitations of each (ArcPad v. ArcGIS Mobile). There has been an increased need related to mobile GIS computing across the agency. We coordinated with ODFW IT staff to spec out a "Power GIS User" high end desktop machine that will be available for high end GIS users that have greater than average data processing needs.

The National Hydrography Dataset (NHD) Hydro Event Management (HEM) tools, version 2.4 were also installed. This software is used for creating and managing events on the NHD.

Region System hardware and software were maintained and backed up regularly, and database security was reviewed. Front-end website and query related systems were moved to virtual servers. A new database server was purchased in a cost sharing arrangement with the Lower Snake River Compensation Program Hatchery Database Project and installed with SQL Server 2008 R2 relational database management software. StreamNet's production database was ported to the new server in the fourth quarter. GIS infrastructure was maintained with server and desktop software being upgraded to ArcGIS 10.

WDFW WDFW StreamNet staff members carried out usual software upgrades, maintenance and data backup procedures where needed throughout the year. In the case of GIS data, the WDFW Location Data Manager started using a more secure backup procedure this year. All other System admin tasks and upgrades were carried out outside of the StreamNet SOW.

Work Element: 160 Create/Manage/Maintain Database

Title: 2 **Application and interface development**

Description All StreamNet cooperators will develop and maintain computer applications and interfaces that facilitate the entry, management and dissemination of tabular and GIS data at the regional and subcontracting agency levels. This will include development of new applications and tools as well as maintenance or modification of existing applications. To the degree possible, cooperators will share code and applications between agencies and with other data source agencies to maximize project efficiency.

Deliverable The databases, computer applications and interfaces necessary for obtaining, storing, managing and disseminating data are developed and maintained in such a way that they support accomplishment of project goals.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC The software used for maintaining the library catalog was kept updated within the release currently in use. Other applications were also used, including various social media programs.

FWS The computer applications used for developing and maintaining StreamNet data were maintained. No new applications were developed.

IDFG IDFG StreamNet staff members worked with agency biologists to make changes to the IDFG Spawning Ground Survey database. We participated in work being conducted to develop an anadromous fish hatchery data system, a collaborative project involving multiple federal, state and tribal partners. The group decided to move the database and development to a more "neutral" location. As a result, migration of the database to PSMFC by StreamNet personnel continues, but work on the system development has halted until the Lower Snake River Compensation Plan refills project management and development personnel needs.

MFWP Databases, applications and interfaces were maintained and updated at user request throughout the year.

StreamNet staff members were very involved in the development and creation of a centralized survey and inventory database. Staff attended meetings and provided data requirements reflecting StreamNet DEF requirements.

All MFWP mapping services in ArcGIS Server were migrated to the MFWP infrastructure; legacy applications in ArcIMS will be rebuilt in FY-12. A regional data review mapper was developed for reviewing multi state data layers. A modularized mapping application was launched near the end of the year. All new MFWP applications use the new framework.

ODFW Application and interface development and maintenance efforts this year included enhancing the ODFW Reference Database to better track references used for StreamNet, preserve the historic record of modified/deleted references, create links between trends and StreamNet Library records, add needed fields, and identify references we maintain as electronic copies. The data structure and user interface for Oregon's Trend database was enhanced by updating the Trend form and database backend. The Data Contacts database was modified with new fields and validation rules as needed.

The ODFW Data Clearinghouse (DC) website was enhanced with the ability to acquire employee details from the ODFW Active Directory. However, this enhancement was not deployed pending further expansion of the DC purposes and the need for more record security options. Many other fixes and enhancements were deployed as needed, including the Search By Contact query, and integrating the Windows Communication Foundation service. Several more applications were converted from .NET Framework 1.1 to 3.5. We continued to contact DC record owners to request they review and update their posted datasets. We also continued to pursue replacement owners for orphaned DC records.

Development of an application to facilitate change requests to the Fish Passage Barrier data continued with added functionality that automates the conversion of tabular coordinate data into spatial data records inside of the production barrier geodatabase. Scripts necessary for processing new and updated fish passage barrier records were also implemented. However, the application was not completed because our programmer position was vacant for two-thirds of the year. It may ultimately take a GIS application developer specialist to create the application that's envisioned.

Oregon StreamNet staff crafted and diagramed a proposed ODFW Information Management System, refining the design based on ODFW input. Staff also had exploratory discussions with ODFW Production staff about creating a map application for hatchery releases and recoveries. Staff also took opportunities to explore the coordinated use and management of electronic field data collection devices, such as Trimble Juno and Yuma devices, the use of ArcPad tools on them, and bringing the data back into ArcGIS.

Region Existing applications and interfaces were maintained. Significant effort was put into developing a new data query interface that delivers new query functionality and provides an enhanced interface that should appeal to more users and lower the learning curve for using the system. This new interface has been shown within the project and at several meetings and response has been good. We anticipate having a beta version available for broader testing in January 2012.

As part of an out-migrant data capture and analysis project primarily funded by U.S. Fish and Wildlife Service in Sacramento, CA, design and construction of a user interface and statistical analysis routines were begun. Funding for this aspect of that project is nearly 100% by USFWS, but significant input, feedback, and direction are provided by PSMFC under StreamNet funding. The StreamNet Regional Fisheries Biologist provided direction, and programming ideas and code for the user interface, as well as layout designs for data input forms. Programming code primarily related to SQL statements for database interaction, and to creating code for users to be able to customize the user interface for their own needs. For example, users will be able to hide input controls that they do not need, they will be able to change the position and size of controls, set which ones will be tabbed to when the user hits the Tab key, and also change the tab order. These changes will be saved, but can also be set back to the last saved layout or to the default layout. Under StreamNet funding we provided directions and logic for performing tasks performed by the programmer and the statistician who are funded entirely by USFWS. We will make this database platform available to agencies and tribes in the Columbia Basin when it is operational.

The Region created a discussion forum for use by the Coordinated Assessments technicians. The entries were monitored, training was provided to the technicians, assistance was given as necessary, and the entries marked as "resolved" as appropriate. This discussion forum proved to be very helpful for these data technicians who needed to share information but were scattered in towns across the Columbia Basin.

Also for the Coordinated Assessments, Regional staff contributed significantly to development of the Data Exchange Template in an Excel spreadsheet format. The spreadsheet served a dual role in defining the specific data elements that were needed, and providing a field to record one example of each data element that was available. Requesting that the agencies actually provide an example data point proved to be vital in determining exactly how available the various data elements were within each agency. This provided the necessary background for the agencies to develop a list of gaps and needs for their ability to share the required data as a routine business practice. In addition to contributing to the development of the DET, we also provided training for the Coordinated Assessments technicians in its use and in Visio for creation of data analysis flow diagrams.

WDFW JMX is a Washington inter-state and tribal database. Ultimately, the JMX data collection will be mined for StreamNet submissions. Throughout the year, an interface was being developed for the JMX. A contributing smolt trap database was

developed in Access to store regional trap data until the JMX is complete. Once the JMX is complete, stored Access smolt trap data will be incorporated into the new JMX database.

WDFW hasn't generated and maintained events for arc-based data after spatial feature management was moved from coverage's to ArcGIS. The Location Data Manager drafted a quicker process to generate events because the dedicated ArcGIS routine (Create Route Events or a Locate for the whole arc line) grinds away for too long.

The Location Data Manager tested procedures to generate orthophoto subsets in case the server connections fail during compiler visits to regional or remote offices.

The Data Manager continued work on the Sport and Commercial harvest database that will house the data collected using the handheld data loggers. Outputs for summary data were finalized and are being tested.

WDFW continued to put the final touches on the Agency's hatchery management database, UI FishBooks.

Work Element: 160 Create/Manage/Maintain Database

Title: 3 **Data (content) management**

Description The StreamNet project will manage data at the regional and subcontracting agency levels to assure timely and accurate data flow from source to final distribution. Activities include exchange of data to PSMFC, loading data, updating data, quality assurance procedures, metadata development, etc. Emphasis will increase on improving timeliness of data development and dissemination, and we will initiate work to develop metadata templates, by data type and over time in pilot subbasins.

Deliverable Data are maintained and managed at PSMFC and the cooperating projects so that they are available through the StreamNet website and cooperating agency websites. A data delivery timeline application will be maintained on the StreamNet website. Work will have started on developing metadata templates. Metadata are published as Web Services.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC We continued to work on improvements to our data reporting functions. We are also working on quality assurance/quality control procedures to insure the relevance, correctness and timeliness of data supplied to the StreamNet project at PSMFC.

FWS FWS data were compiled and submitted on time.

IDFG IDFG StreamNet personnel conducted quality control reviews of redd count and carcass data from 2010 and 2011 field surveys. The review included "snapping" the redd, carcass, and survey GPS locations to the StreamNet hydrography. Incorrectly coded species codes for spring/summer Chinook salmon were corrected in the IDFG Spawning Ground database. Steelhead and Chinook salmon hatchery return data were also given a thorough quality control review. IDFG reviewed its species code table to correct common names to change instances of redband trout (native) to rainbow trout above Shoshone Falls. Stream names in the distribution layers for redband trout and Yellowstone cutthroat trout were verified with IDFG biologists. The Idaho hatchery facilities and trap tables were updated.

MFWP Spatial data and metadata were maintained and updated where necessary, and data were quality checked.

ODFW Routine effort was spent this year ensuring the data quality (correctness and consistency across the years of data availability) of Oregon's existing StreamNet Trend information. Trends were randomly selected and a detailed quality check was performed during the update process; other trends were targeted based on suspected or known issues. Staff coordinated with Regional StreamNet to confirm correctness and/or rectify discrepancies that were discovered during routine QA/QC processes. Oregon staff spent a great deal of time correcting and updating issues with missing and/or changed LLID's and missing or incorrect Begin and End kilometers & feet for existing trends. This process resulted in 208 new measures.

With each data submission, we worked with Regional StreamNet staff to ensure exchange compliance. This included issues related to hatchery return timelines, inadvertently omitted distribution records, converting some hatchery return trends to Dam/Weir count trends, and LifeHistoryID coding.

Following the guidelines for naming and titling non-standard references, staff continued correcting reference records to reflect the new naming convention for datasets, edited the Author’s field according to the standard convention, and to include fields for File Format and Reference Update Frequency. QA/QC was performed on 2,586 references. Sixty-two groups of duplicate references were consolidated into single references.

The methodology we use to resolve duplicate barriers between disparate barrier datasets was refined throughout the year based on lessons learned as new data were integrated into Oregon’s Barrier dataset. The Fish Passage Barrier Data Management Plan was updated to include attribution guidelines and QA steps, to clarify workflows related to versioned data, to describe the process for populating statewide feature and site identifiers, and to build data processing operating standards related to duplicate reconciliation and linear referencing. We also drafted a "roadmap" document to describe the working plans for migrating both barrier and fish habitat distribution data to the national hydrography dataset and managing those data in

association with the NHD. The document also identifies and describes the need to actively manage the NHD as well as the need to maintain compatibility with the StreamNet regional mixed scale hydrography. Staff completed QA review of OASIS, WORP and BLM coho & OASIS and BLM steelhead habitat distribution data recently added to the Fish Habitat Distribution database. Updates were made to the attribute domains within the OFHDDS to better describe resident habitat use.

Metadata were created for all barrier data process steps that were conducted to compile, convert and ingest separate barrier datasets into the Oregon Fish Passage Barrier Data Standard format geodatabase. All other sections of the metadata document were updated as well.

Region Data additions during the project year included 850 new trend series and over 9,500 new count data observations for those trend series, more than 13,000 new fish barrier records and almost 1,300 additional dams primarily located in Oregon, new mixed-scale hydrography that added over 17,000 new 24K streams having fish data associated with them, 1,300 new fish distribution records, about 700 new hatchery returns records with 6,700 hatchery disposition records, 1,100 additional reference documents and 460 additional fish age records, as well as many data updates and replacements and smaller additions to other data. SOTR identifiers were harvested from the CBFWA website references page and maintained for reference to assist CBFWA in future updates.

The Region assisted ODFW StreamNet personnel with resident fish use-type codes for distribution data, most specifically for codes to use for coastal cutthroat trout. The Region also consulted with ODFW regarding the interaction between dams and barriers, and regarding several specific questions about coding barriers.

The region staff assisted WDFW with data QC, and reported data errors to WDFW, ODFW IDFG, CDFG & CRITFC as they were found.

Regional personnel met several times with Peter Paquet and an intern from the Northwest Power and Conservation Council to discuss the possibility of updating the geographic referencing for the NPCC Protected Areas data set that is maintained by StreamNet. The Regional GIS Coordinator and the intern crafted a plan for updating the list, however the intern had not by the end of the fiscal year had time to perform significant work on this task. This will be pursued further in fiscal year 2012.

WDFW The Location Data Manager submitted the polygon layer for catch areas this year. To augment our tools to historic River Mile data, she also gathered River Mile Index documents created from 1964-1976 by the Hydrology and Hydraulics Committees. She georeferenced and consolidated the georeference data for three WDFW warm water datasets to support the WDFW Conservation Initiative. This effort will be used to start developing a warm water fish distribution database. Exchanges were submitted for hatchery facilities and returns data, and GNIS attributes for the next version of the Mixed Scale Hydrography (MSH3) submission.

Work Element: 160 Create/Manage/Maintain Database

Title: 4 **Data exchange standard development**

Description The project will establish and maintain data exchange standards to ensure regionally consistent content and format of data that originate from multiple data sources. We will maintain adopted and develop proposed data exchange formats for data categories described under Work Element 159. This task will provide coordination and technical assistance regarding interpretation of database structures and codes. The formal process for creating new and revising old DEFs may require significant amounts of time, potentially more than a year, for complex data categories.

Deliverable The formal Data Exchange Formats that are used to standardize data regionally are maintained and updated as needed. Additions and changes to the DEF are made in accordance with the DEF guidance document. At least one new updated DEF version is adopted during the year.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC CRITFC StreamNet was not involved in any DEF development work during FY 11.

FWS There was no significant activity on DEF issues this year.

IDFG IDFG personnel participated in StreamNet Technical Committee discussions and tested GroupTrendID in the StreamNet DEF using sample data for the Marsh Creek Watershed GroupTrendID that links various redd count TrendIDs (Marsh, Cape Horn, Beaver, and Knapp Cr) together for the Marsh Creek Watershed trend count. They also discussed the need for a field similar to EndExtentID in the FishDist DEF that indicates when a distribution starts at the mouth of a stream (and not). Web reports from IFWIS were demonstrated to the StreamNet Technical Committee. Other discussions included updates and issues regarding the latest multi-scale StreamNet hydrography, and the potential for adding TRT and CRITFC population delineations to StreamNet.

MFWP No DEF work was conducted or requested.

ODFW Oregon StreamNet staff participated in and contributed to discussions during technical committee meetings on DEF related

issues. GIS staff suggested some refinements to the Barrier DEF. Other than that, the DEF remained stable and there was no need for changes.

Region No significant changes were required for the StreamNet DEF this fiscal year, and therefore a new DEF was not published. A few codes were added, and the numeric data type for one field that appears in two tables (height of a dam) was changed from integer values to allow decimal values. This latter change was done to permit recording the height of fish migration barriers to values other than whole feet measures.

The Regional Fisheries Biologist met with ODFW biologist Julie Firman to discuss the correct way to capture and display data that were collected under a Generalized Random Tessellation stratified sampling design. It was determined that we probably have all the knowledge necessary to create a DEF that would let us properly store and display such data sets. A specific DEF for doing so and a query system output mechanism for showing these will be pursued in FY-2012.

Under funding primarily from the U.S. Fish and Wildlife Service in Sacramento, CA, significant work was performed in the completion of a data dictionary for out-migrant salmonids. The data dictionary defines the structure of the database, and is similar to the DEF used by StreamNet to define data sharing standards. A database matching the data dictionary was also created. Several iterations of the data dictionary and database were made, based on extensive input from users and from the other members of the team creating this system. Two workshops, each 2 days long, were held in Oroville, CA to discuss the database, user interface, and statistical analysis proposals and receive feedback from biologists who are most likely to adopt the system in the near term. Their input was used to help guide creation of the database and associated programming. Testing of the database was begun by converting several existing California data sets. As difficulties arose changes were made to the data dictionary and database. As of the end of fiscal year 2011, the database appears to be quite functional and robust. While this project is being funded primarily by USFWS in Sacramento and thus there are some aspects of the database that are specific to that area, the design was purposely created to allow easy adoption in any area where salmonid smolt monitoring is desired. We will make this database available to agencies and tribes in the Columbia Basin when it is fully functional.

StreamNet staff participated actively in the development of a Data Exchange Template (equivalent to the StreamNet DEF) for the Coordinated Assessments project. The DET was developed in Excel and provided a list of all data elements that would be shared among the state and tribal fisheries management agencies. The focus was on three specific Viable Salmonid Population (VSP) Indicators and the Metrics that went into calculating them, along with metadata describing the origin of the Indicators. In addition to providing the list of data elements and their definitions and desired formats, the DET spreadsheet also had fields for the agencies to record actual data elements for one year for each salmon and steelhead population they had data for. The ability to include actual data went beyond what is normally included in a DET, but it proved to be a useful tool for the agencies to test how accessible the data actually were in their agency.

WDFW WDFW staff participated in the development of the coordinated assessments indicator data standards throughout 2011.

Work Element 161: Disseminate Raw & Summary Data and Results

Work Element: 161 Disseminate Raw & Summary Data and Results

Title: 1 **Develop and maintain Internet sites for data dissemination**

Description StreamNet will continue to maintain and enhance the StreamNet Internet sites to provide access to tabular and GIS data from the StreamNet database. PSMFC will maintain and enhance the primary project website (www.streamnet.org) and associated applications, including the data query system, the interactive map applications and the Data Store. Partner agencies will assist with routine periodic review and comment on the primary website and may disseminate data through websites associated with their agency's StreamNet project and references housed in the StreamNet Library. Priority will be given to incorporating data and references developed through Work Element 159. The website will also be used to archive data sets developed by FWP participants for data that do not fit within the StreamNet DEF (Data Store archive function), including the means to index and search the archive. Metadata will be published as a web service, making all data findable through external portals.

Deliverable Internet sites for the dissemination of data at PSMFC and the cooperating agencies are maintained and functional. New web pages and features are developed as necessary to maximize the availability and utility of data. Metadata are published as web services.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC Minor fixes were made to the CRITFC StreamNet Library website. We also developed a 'sandbox' for testing pages and new developments before placement on the official website, http://www.fishlib.org.

IDFG IDFG used and provided feedback on the StreamNet Web site on a regular basis.

MFWP The StreamNet website was used and queried. Several independent datasets were uploaded to the Data Store using the new data publishing tool. Issues encountered with the Data Store upload were relayed to StreamNet staff and quickly remedied.

ODFW Functionality-related feedback was provided to Regional StreamNet staff throughout the year.

All Oregon StreamNet websites were maintained and updated as needed throughout the year. The Secure Socket Layer certificate was updated this year.

We continued to manage and maintain the Corvallis Research Lab's (CRL) website, where project results and reports of several major ODFW data collection projects are posted. This gives Oregon StreamNet immediate and direct access to datasets of interest to StreamNet. Several progress, annual and information reports were posted to the site this year, and new pages were created for the Biometrics and Coastal Chinook Research and Monitoring Projects. All 49 file names associated with NRIMP and CRL sites were updated to file naming conventions.

Region The StreamNet website (www.streamnet.org) was maintained as the primary means of disseminating data from the main database, and it achieved greater than 99.5% 'up time' throughout the year. Use of the website and its key data delivery pages was summarized in Tables 2 and 3. More detailed data on who uses the various sections of the StreamNet website are presented for the main website minus the tabular data query and maps (Table 6), the tabular Web Query System (Table 7) and the interactive mappers (Table 8). Statistics for the data delivery portions of the website are based only on visits where users actually viewed or downloaded data. The identity of users was based on deconstructing the domains for people accessing the sites. Total usage is larger than is presented in the tables since many additional entities had small numbers of visits.

A new "Featured Item" was created for the StreamNet home page describing the new Data Store and Data Publishing Service. It describes the new online dataset submission process and the advantage for BPA funded projects that project level details are automatically pre-loaded into the metadata via a web service from the BPA Taurus database. The Featured Item is meant to bring attention to particular items, and contains a link to the item. Various other web pages were created or updated through the year.

A number of items were added to our links page this fiscal year. Among them were:

-- NBII's renewable energy web site;

-- BioOne.org (online peer-reviewed journals)

-- USBOR's "Equipment Cleaning Manual to Prevent Spread of Invasive Species".

WDFW When called upon, WDFW StreamNet staff participated in review and brainstorming sessions and input centered around the improvement of the StreamNet web site.

Table 6. Breakdown of users of the main StreamNet website, not including the data query or maps.

Top Users (number of separate visits)	2011	2010	2009
Internet service providers (Comcast, Verizon, etc.)	4,200	8,369	2,530
State of Oregon	881	974	594
Outsource Technologies, Inc.	154	0	80
National Oceanic and Atmospheric Administration	144	572	306
Bonneville Power Administration	141	296	150
U.S. Fish and Wildlife Service, IRM/BFO hq	111	262	185
Headquarters USAISC	96	515	277
U.S. DOI Bureau of Land Management	81	155	95
State of Idaho	63	166	128
University of Nebraska-Lincoln	60	93	19
USDA Office of Operations	58	244	201
Oregon State University	40	148	64
University of Oregon	37	134	8
Washington State Department of Fish and Wildlife	36	584	261
University of Washington	24	169	70
National Wetlands Research Center, USGS	23	70	38
HDR	18	58	61
Portland Community College	14	55	60
U.S. Geological Survey	11	74	25
State of Montana	8	102	45
U.S.D.A. Forest Service	0	593	339
Sitka Technology Group, LLC	0	98	0
Washington School Information Processing Cooperative	0	89	65
Portland State University	0	55	39
Environmental Science Associates	0	12	36

Table 7. Breakdown of users of the tabular data query system on the StreamNet website where data were viewed or downloaded.

Top Users (number of separate visits)	2011	2010	2009
Internet service providers (Comcast, Verizon, etc.)	~1200	2,461	883
State of Oregon	881	732	307
USDA Forest Service	188	196	76
Outsource Technologies, Inc.	154	380	0
National Oceanic and Atmospheric Administration	144	242	134
Bonneville Power Administration	141	97	44
U.S Fish and Wildlife Service IRM/BFO Hq	111	83	43
Headquarters USAISC	96	115	769
US DOI Bureau of Land Management	81	59	37
State of Idaho	63	50	52
University of Nebraska-Lincoln	60	32	9
USDA Office of Operations	58	87	60
Oregon State University	40	65	14
University of Oregon	37	32	0
Washington State Department of Fish and Wildlife	36	60	23
University of Washington	24	17	30
Oregon State System of Higher Education	17	26	8
Nez Perce Tribe	14	25	4
U.S. Geological Survey	11	23	2
University of California Santa Barbara	8	85	11
Environmental Science Associates	0	10	15
Landau Associates	0	11	14

Table 8. Breakdown of users of the interactive map applications on the StreamNet website.

Top users of the StreamNet map applications	2011	2010	2009
Internet service providers (Comcast, Verizon, etc.)	2,322	1,875	1,352
State of Oregon	484	453	344
US Forest Service	366	439	282
National Oceanic and Atmospheric Administration	312	286	204
Headquarters USAISC	287	497	371
USFA Office of Operations	208	206	204
Bonneville Power Administration	199	270	137
U.S. Fish and Wildlife Service IRM/BFO Hq	137	140	132
Parametrix	112	49	26
US DOI Bureau of Land Management	103	90	68
HDR	84	54	52
University of Oregon	54	68	8
ICF Kaiser International	52	0	0
State of Washington - Department of Fish and Wildlife	50	0	0
department of homeland security	49	0	0
Road runner Holdco LLC	48	0	0
U.S. Environmental Protection Agency	41	42	23
State of Idaho	37	47	33
Department of Interior	32	0	0
University of Washington	31	45	26
Vigil-Agrimis, Inc	28	37	0
Pierce County	27	37	10
W H Pacific	27	21	36
Navy Network Information Center (NNIC)	26	0	0
Portland State University	26	0	0
Scansafe Inc.	26	0	0
King County Gov	25	29	51
Oregon state system of higher education	24	0	0
Washington State Department of Fish and Wildlife	24	72	37
Snohomish County Government	23	0	0
CH2MHill	22	0	0
Embarq Corporation	22	0	0
URS	22	0	0
Oregon State University	21	36	27
Clackamas education service district	19	0	0
Washington state department of transportation	19	0	0
Environmental Science Associates	0	5	36
FEMA	0	51	21
Landau Associates	0	29	29
Portland Community College	0	11	32
State of Washington, Department of Transportation	0	0	26
State of Washington, Department of Ecology	0	0	40

Work Element: 161 Disseminate Raw & Summary Data and Results

Title: 2 Respond to data/information requests

Description: Receive and respond to requests for data, maps and other information; source materials; and custom data products at the regional and cooperating agency levels, as appropriate. Response to requests will be honored within the limits of available resources, with priority given to information requests having direct relevance to the Fish and Wildlife Program and data source agencies/departments. Other priorities will include implementation of the Endangered Species Act and federal, state, and tribal natural resource management activities. Custom data development will be dependent on available resources.

Deliverable: Requests for information or assistance are responded to in a timely manner (within one business day at PSMFC). If within StreamNet capabilities, requested help or information is provided as rapidly as reasonably possible within existing resources.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
All	PSMFC and the partner projects all responded to requests for data and assistance during FY-11 (Tables 3, 4 and 5). CRITFC reported a slight drop in the number of requests, possibly a result of an increase in the number of available electronic documents online. A slight drop in requests at IDFG may be the result of the ability of IDFG staff to access data directly from the IFWIS databases.

Work Element: 161 Disseminate Raw & Summary Data and Results

Title: 3 Promote availability of StreamNet data and encourage participation in the project

Description: Participate in scientific, professional, and other relevant groups to increase awareness of the StreamNet project, inform others of the data and data related services available from the project, and to encourage participation by others in providing relevant data to the project.

Deliverable: The project and its data and services are made better known among potential data sources and data users, leading ultimately to increased participation in providing and using data.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
CRITFC	The StreamNet Library staff continued to participate in various scheduled activities at the local and regional level to create awareness of the Project and the Library, including such activities as the Sturgeon Festival, symposia and workshops, and professional conferences. The StreamNet Librarian also participated actively in the Oregon Libraries Network and library professional associations. The Project Leader worked closely with the Tribal Data Network project to organize and conduct an annual Tribal Data Workshop. The workshop participants discussed progress during the past year, major problems and data management gaps, and priorities to address those problems and gaps in the coming year. The Project Leader is a member of the StreamNet and PNAMP Steering Committees and the CBFWA Management Advisory Group and several associated data management work groups. He is also a member of the Pacific Salmon Commission's Habitat and Restoration Technical Committee. Data sharing and coordinated data management practices are common topics in each of these groups. The PSC-HRTC is looking to habitat restoration activities in the Columbia Basin as an example of Best Practices for habitat restoration and habitat data management to meet needs of the Pacific Salmon Commission.
FWS	The project leader spread knowledge of StreamNet, when appropriate, during routine interactions with colleagues.
IDFG	IDFG promoted the StreamNet project by providing services to a wide range of people. We also identified StreamNet as a major partner of the Idaho Fish and Wildlife Information System (IFWIS). The IDFG StreamNet project manager presented a paper at the 2011 American Fisheries Conference in Seattle about IFWIS, which identified StreamNet as a major partner in IFWIS.
MFWP	Numerous presentations on CAPS occurred; StreamNet data is the basis of all fish data in the system.
ODFW	Oregon StreamNet staff gave several presentations this year, including presenting version 2 of Oregon's Framework data standard for distribution data and a summary of the proposed minor revisions to the Oregon Fish Passage Barrier Data Standard to the 13th GIS Standards Forum. The distribution standard was also posted on the Geospatial Enterprise Office / Framework Standards web site for GIS community review and comment. Staff attended the ODFW statewide Fish Biologist meeting and promoted StreamNet data types and activities.
Region	One StreamNet Newsletter was published this fiscal year. This was number 13, sent May 16, 2011 to 862 people. This

newsletter can be found at http://www.streamnet.org/streamnet_news_13.html. The 13th newsletter provided information about new features in the StreamNet query system, news about the Data Store and Data Publishing Service updates, StreamNet's role in supporting the Coordinated Assessments, an update about Montana's Crucial Areas Assessment and Planning System, and notification that a new Access version of the StreamNet database was available.

The Program Manager participated in the fall 2010 annual meeting of the Organization of Fish and Wildlife Information Managers, where he presented a poster on the StreamNet Data Store and Data Publishing Service.

In September, the Program Manager and the Regional Fisheries Biologist attended the annual meeting of the American Fisheries Society, held in Seattle. Two poster presentations and one oral presentation were given. One poster was informational, meant to make biologists in the region aware of the Protected Areas list. The other poster provided a summary of field results that demonstrated the efficiency and effectiveness of using a digital pen to automatically create electronic data in Excel simply by writing on a paper form. The oral presentation was an overview of the success and failures, and reasons for success, of various attempts at developing regional scale data delivery systems as part of a symposium on regional data sharing.

WDFW StreamNet as a vehicle for information distribution and exchange was promoted at the Coordinated Assessments planning meetings during 2011.

Work Element: 161 Disseminate Raw & Summary Data and Results

Title: 4 **Provide access to Library services**

Description Receive and respond to requests for information and/or documents. Response to requests will be honored within the limits of available resources and technology. Priority is given to those requests with direct relevance to the Fish and Wildlife Program and StreamNet participants and cooperators. Other priorities will include implementation of the Endangered Species Act and federal, state, tribal, and local natural resource management activities.

Also provide information to customers via news feeds and other resources so that customers are kept up to date on new information relevant to the fish and wildlife program and library services.

Deliverable Requests for information or assistance are responded to in a timely manner. Library assistance is provided as rapidly as reasonably possibly within existing resources.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC We continued to provide documents and information on request. The majority of documents are provided electronically via email. Our Twitter feed and Facebook page are continually updated with relevant news and interesting tidbits that readers may be interested in.

Work Element: 161 Disseminate Raw & Summary Data and Results

Title: 5 **Provide access to Library collections**

Description The StreamNet Library will provide customer access to the materials described in the collection development work element by providing facilities for storage of paper and electronic copies of documents, an online catalog of all documents in the collections, and staff to answer location questions and respond to requests. They will provide library services to the community as outlined in the library mission statement. They will network with other agency and regional libraries to provide better access to other collections that will enhance the StreamNet Library and to avoid unnecessary duplication of effort and materials.

Deliverable The StreamNet Library is open to customers during regular business hours. Customers have full access to the collections, in physical and electronic formats. Other library services are provided through various contact points.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC The StreamNet Library maintained normal, regular hours during FY-2011. With the addition and maintenance of our electronic collections, much of the library is available 24/7 to the international fisheries research community.

Work Element 189: Regional Coordination

Work Element: 189 Regional Coordination

Title: 1 **Support regional efforts under the Fish and Wildlife Program**

Description Participate in planning, development and/or coordination meetings with regional projects and programs under the Fish and Wildlife Program to help develop a regional data management framework, to establish data type and data service priorities, and to provide advice in the area of data management, as requested. Provide input on ways StreamNet can effectively contribute to the programs and general advice about data management. Participate in coordination groups (e.g., CBFWA, PNAMP, etc.), advisory groups, task forces, etc. whose purpose is to enhance the effectiveness of the Fish and Wildlife Program relative to its data development activities. This also includes planning for the next round of subbasin planning and related activities.

Deliverable StreamNet staff have participated actively in and supported projects funded through the FWP, including CBFWA and PNAMP. StreamNet functions as a recognized component of the regional data management framework.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC The CRITFC StreamNet Project lead continued to serve on many committees and workgroups with relevance to the Fish & Wildlife Program. He is a strong voice for CRITFC as well as the PSMFC StreamNet Projects. We continued to provide opinions and information for CBFWA, PNAMP and the Coordinated Assessment process.

IDFG IDFG StreamNet personnel participated in discussions and workshops for the Coordinated Assessments pilot project.

MFWP No opportunities to assist other projects in the FWP arose this year.

ODFW Oregon StreamNet staff participated in a number of regularly scheduled PNAMP meetings, including Integrated Status and Trends Monitoring (ISTM), Fish Leadership, PNAMP Data Management Leadership Team, coordinated assessments meetings and workshops, and Metadata Workgroup meetings, contributing to shared discussions about data management-related activities, future directions, and funding options. Oregon StreamNet and ODFW staff drafted an ODFW Coordinated Assessments Data Sharing Strategy, and attended the 2-day workshop to review all Strategies in September.

Staff participated in WGA pilot project efforts which relate directly to the use of StreamNet data.

Region StreamNet was highly active in coordination with regional scale organizations and activities this year. In addition to continuing its role on the Pacific Northwest Aquatic Partnership (PNAMP) steering committee and in several work groups including the Metadata Work Group, we took on a major role in the Coordinated Assessments (CA) project.

The CA project represents a significant step forward in developing a comprehensive collaborative approach to fish population monitoring and related sharing of data. The project arose from the state and tribal fisheries managers meeting to devise a coordinated approach to monitoring and then calling for a coordinated approach to share the data. That meshed with PNAMP efforts to develop a coordinated approach to aquatic monitoring across the Pacific Northwest. The Columbia Basin Fish and Wildlife Authority, representing the management agencies, and PNAMP, representing regional scale and mostly federal entities, joined efforts to lead the CA project in developing a regional scale approach to sharing monitoring data.

StreamNet jointed this effort, seeing it as a major opportunity to work toward development of a regional approach to data sharing, establishing priorities for needed monitoring data, and for developing the increased data management capabilities in the agencies that create the data that have been needed for some time. StreamNet serves on the Coordinated Assessments Planning Group, and is also one of three entities in the Core Group that led planning for the project. StreamNet played a large role in developing a draft Data Exchange Template (DET) that was used to explore the capacity of agencies to share the key selected data. We hired and managed a staff of ten temporary data technicians to work with the management agencies to locate and acquire data, define internal data flow pathways, identify gaps and needs in current data sharing capacity, and assist the agencies in developing data sharing strategies. The outcome from these successful actions is summarized in a report available at http://www.pnamp.org/sites/default/files/ca-lessons_learned_report-2011-05-17.pdf. And, StreamNet staff members in the participating sub-projects played strong roles in the CA project within their respective agencies.

As a result of input received through the CA project, StreamNet is now in the process of amending its priorities to expand data development emphasis on the Viable Salmonid Population (VSP) Indicators and their supporting Metrics and metadata. In Fiscal Year 2012 StreamNet will lead the finalization of the DET that will set the regional standards for routine sharing of the selected data elements. We will establish development of the derived Indicator estimates, with their supporting Metrics, as a priority for our data development activities in future years. And, we will expand efforts to assist the data creating agencies in developing internal data systems that will be capable of hosting data in standardized format as web services, which will be a requisite for developing a regional distributed data dissemination system based on the concepts of the EPA's Data Exchange Network for water quality data.

WDFW The Data Manager supervised one technician who is working on the Lower Columbia River Coordinated Assessment for Salmon and Steelhead. The Coordinated Assessment for Salmon and Steelhead (CASS) is a Columbia Basin project to develop a regional approach that supports the data collection and storage, analysis, and reporting of basinwide information for priority management decisions.

The Vancouver data compiler helped the new PSMFC temporary employee for the Coordinated Data Assessment position get a lay of the land of the WDFW office, who to talk to, set up a work station, as well as work with him on some of our background information on methodology, biologist contacts for information and any questions that arose.

WFW StreamNet staff continued to participate in the Integrated Status and Trends Monitoring (ISTM) meetings and data compilation and reporting.

Work Element: 189 Regional Coordination

Title: 2 **Coordinate with and support data source agencies**

Description Coordinate with state, tribal and federal fish and wildlife agencies/departments that develop data of interest to StreamNet's mission to streamline data capture, determine agency data management needs and work to improve their internal data management and data transfer to StreamNet. Demonstrate data management tools and applications developed by StreamNet staff and others to increase interest in and adoption of similar tools to improve data flow and automation. Support development of internal data management capabilities and data automation to the degree possible under existing funding, and attempt to link data tools to reporting and decision making. Encourage data sharing in exchange for help with data management.

Deliverable Data capture and management tools demonstrated to agencies and regional groups. Increased involvement with tribes and development of plans to increase capture of tribal data. Increased commitment of agencies to increased data flow automation.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC As a related project, the Tribal Data Network Coordinator has taken the task of developing new data management tools and works with the database manager to demonstrate the tools to the tribal agencies.

IDFG IDFG StreamNet personnel worked with IDFG, US Fish and Wildlife Service, Nez Perce Tribe, Shoshone-Bannock Tribes, Idaho Power Company and others on a variety of data projects that provided data to StreamNet and also helped all the partners develop data systems that support their needs.

MFWP Staff continued to meet with the Fisheries Bureau to collaborate and provide guidance. Many data types have been discussed for which no StreamNet DEF exists. Much of this work is conducted in conjunction with the Fish and Wildlife Information System, the centralized data system being developed by MFWP.

ODFW Oregon StreamNet staff coordinated with Corvallis Research Lab monitoring project staff to discuss the Oregon fish habitat distribution data standard (OFHDDS) and NRIMP's efforts to incorporate monitoring project data into the OFHDDS database. We discussed formalizing the exchange and timing of information between programs. We also coordinated with the Multi-species Coastal Conservation Planning process.

We coordinated with Benton County, OWEB, and USFS for reconciling their various databases with the OFPBDS database. We'd like to automate integration of OWRI with the OFPBDS database, and suggested adding fields to OWRI to better meet OFPBDS requirements. We continued to work with ODFW's Aquatic Inventory Project (AIP) on a methodology for incorporating habitat unit level data into the OFPBDS. This work allows Oregon to submit a more complete and consistent statewide barrier dataset in the most recent hydrography to the StreamNet database.

Final changes to the Oregon Fish Habitat Distribution Data Standard document were incorporated from Oregon Framework Fish Habitat Distribution Data Standard workgroup, ODFW, Oregon Military Dept., Pacific States Marine Fisheries Commission and NOAA Fisheries input. This input led to the release of version 2.0 of the standard in February. Staff attended the PNW Hydro Framework Steering Committee meeting discussing status updates on use of the NHD within Washington and Oregon state agencies and also the NetMap tools developed by Earth Systems Research Institute (ESRI) which support the development of "intrinsic potential" data. These may prove to be instrumental in our development of historical fish habitat distribution data related to the Barrier Inventory and Prioritization project.

Oregon StreamNet staff worked with the Department of State Lands and ODFW field and management staff to provide the best information possible for updating Oregon's Essential Salmonid Habitat (ESH) designations.

Staff members continued to chair and participate in the ODFW GIS Coordination Group, including participation in several Group and Subgroup meetings. Efforts this year focused on developing and finalizing agency Location standards, addressing changes to the FGDC metadata standard, solidifying agency representation, the increase in mobile device usage in the agency, the GIS Enterprise license agreement renewal, a fair allocation of ESRI Virtual Campus training credits, and producing

quarterly GIS Newsletters for agency staff. Oregon StreamNet staff wrote articles or documents on a few newsletter topics: the Decision Support System, the upgrade to ArcGIS version 10, and a GPS and Mobile Device Comparison Table.

Time was also spent coordinating the agency's effort to develop a Decision Support System (now known as the Crucial Habitat Assessment Tool). Refining a development plan, numerous meetings, pursuing funding, budget development, and staffing were just a few of the activities associated from this effort. Coordination of this effort included Idaho, Washington, ODF, BLM, and the Confederated Tribes of the Warm Springs. Staff participated in a tri-state "redband expert group" conference calls that included discussion on habitat categorization. This effort is expected to take several years to complete. In order to be successful, it will require improved ODFW data management, which will directly benefit StreamNet's access to quality information. Another task that took considerable time was managing the software license configuration and cost-sharing under the ELA, distributing ESRI Virtual Campus credits, and coordinating the agency's ELA renewal.

Other internal coordination activities related to: the Oregon Coastal and Marine Data Network, and devising a plan to distribute documents, slides, video tapes and pictures in the ODFW Library.

Region Support to the agencies that create fish population monitoring data continued this year, with a significant increase in effort related t the Coordinated Assessments project. StreamNet worked directly with the data creating state and tribal agencies, hiring temporary staff to work within the agencies to begin evaluation of current agency wide data management capacities and offered assistance and guidance for enhancing those capabilities. This was a large part of developing agency data sharing strategies through the CA project. This work will be continued in future years.

Under funding primarily provided by U.S. Fish and Wildlife Service in Sacramento, CA, with lesser BPA funds provided under the StreamNet budget, a data capture and analysis system is being created for out-migrant juvenile salmon and steelhead. Other sections of this report provide details of this work. Though the primary funder desires this product for California Central Valley fish projects, it is being designed so that it will be functional anywhere with little to no modification. It is anticipated that this system will be of value to tribes, states, private consultants, and anyone else estimating the outmigration numbers of salmonids (or any other species that can be captured during a migration), and we will make it available in the Columbia Basin.

WDFW The Location Data Manager attempted but as yet failed to get definitive definitions for un-cataloged stream catalog routes to aid NOAA's assessments in the Willapa and Lower Chehalis Watersheds.

WDFW Continued to work with the Northwest Indian Fisheries Commission to develop a client side application for use by tribal entities to enter data into the JMX.

Work Element: 189 Regional Coordination

Title: 3 **Coordinate with related activities outside of the FWP**

Description Maintain communications between StreamNet and other applicable regional, federal, tribal, private and state-level agencies and activities beyond the Council's Fish and Wildlife Program to identify means for collaboration on data capture and management. On request or as possible, work toward capture of data not currently being entered in StreamNet.

Deliverable Coordination with fish and wildlife programs outside of the FWP on data issues and availability is conducted as possible or needed.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

CRITFC We continued to provide library services to organizations and individuals not affiliated with the Fish and Wildlife Program who are doing research in the natural resources of the Columbia Basin.

The PSC-HRTC is actively seeking ways to share habitat data between parties to the treaty. They are looking to experiences in the Columbia Basin to guide their coast-wide efforts. The Project Leader is also an active participant on the PNAMP Steering Committee and its data management work groups.

IDFG IDFG StreamNet personnel participated with federal and state agencies, tribes, and private industry to provide data and help build data systems that feed the StreamNet database.

MFWP Staff participated in Western Governors Association (WGA) pilot project efforts which relate directly to the use of StreamNet data. The pilot was with the state of Idaho.

Coordination with regional data efforts (WGA, BLM, LCC) have allowed StreamNet data to be repurposed. Montana has been involved with Idaho on the WGA pilot, with Fish Species of Concern as one of the data type. Staff members have been involved in conference calls related to an attempt to develop a comprehensive, interagency stream temperature database.

ODFW Oregon StreamNet staff continued coordination with staff from EcoTrust and ODFW Monitoring Program staff on EcoTrust's project to help ODFW discuss and document the data and data management needs of ODFW's Monitoring Program, and corresponding enhancements to the Oregon Salmon and Steelhead Recovery Tracker, which is a data dissemination tool for Oregon's monitoring data. Oregon StreamNet staff continued to provide data and database consultation.

Redband mapping efforts were coordinated with Idaho and Washington as part of the Western Governor's Association Wildlife Decision Support System, Columbia Plateau pilot project.

Mixed Scale Hydrography coordination with PNW Hydro Framework partners BLM and WA Dept. of Ecology involved event migration and maintenance strategies on the NHD.

The Oregon StreamNet Project Leader participated in the Integrated Landscape Assessment Project (ILAP) - Wildlife Module Update Webinar on Tuesday, July 26th to understand how their modeling is done, with the hope of assessing the utility of their model results for inclusion in the Crucial Habitat Assessment Tool, and how the technology used might be able to enhance StreamNet tools.

Region Staff at the Regional StreamNet office did not have opportunities to work with other agencies and programs not affiliated with the Fish and Wildlife Program this year.

WDFW WDF W continued to coordinate on with NWIFC in the development of the Juvenile Migrant Exchange. WDFW continued to work with partners at NWIFC and Washington Department of Ecology in the development of and conversion of our hydrographic dataset to National Hydrographic Dataset standards.

Work Element: 189 Regional Coordination

Title: 4 **Support regional scale reporting on status and trends for HLI, BiOp, etc.**

Description Support the capture and organization of data needed to produce assessments of population status and trends, such as for the Status of the Resource report (SOTR), other High Level Indicators (HLI) or BiOp related assessments. Participate with developers of these reports to understand needed raw data to create the indicators, and work with data source agencies to facilitate improved data flow to the data analysis and reporting mechanisms. The actual data development to support these efforts will be conducted under WE 159.

Deliverable StreamNet functions as an integral component of data flow to regional reporting of population status and trends.

Project **Accomplishments During Fiscal Year 2011, summarized by Work Element Title**

FWS The FWS project leader checked in with Coordinated Assessment effort to determine how FWS fits into the effort.

IDFG IDFG StreamNet personnel worked with IDFG representatives to identify data needed for high level indicators. They helped hire and supervised data technicians for Coordinated Assessments.

MFWP So far the regional High Level Indicator efforts have been focused on anadromous species, so Montana has not been participating. Our StreamNet fish data will be useful for HLIs when they are applied to resident species.

ODFW Oregon StreamNet staff prepared for and participated in weekly Coordinated Assessments (CA) check-in conference calls, Gaps, Needs, & Priorities Workgroup meetings, CA Planning Group, and CBFWA MAG meetings. Oregon StreamNet created various levels of analysis flow diagrams to illustrate how metrics were calculated and Data Exchange Templates for the natural spawner abundance, recruits per spawner and smolt-to-adult return rates for numerous populations.

Considerable focus was given to supporting CBFWA's Status of the Resource (SOTR) report, identifying trends represented in the 2010 and 2011 SOTR reports that need to be updated for the new upcoming SOTR. Updating of SOTR data summaries contained in the StreamNet data system continued throughout the year. Aside from compiling abundance information to populate SOTR datasets, Oregon StreamNet staff worked to identify irregular references between trend IDs and current SOTR references, reconcile StreamNet holdings with SOTR summaries, and review the newly updated SOTR report for accuracy.

Region StreamNet continued to provide data (over 3/4 of the population abundance data) and assistance to CBFWA for the Status of the Resource (SOTR) report. The SOTR report provides annual assessments of population trends. These, in turn, are used by the NW Power and Conservation Council in their annual list of High Level Indicators.

In addition, much of the work expended on the Coordinated Assessments project related to three specific VSP Indicators, which in and of themselves represent high level indicators of population status.

WDFW WDFW participated in many meeting concerning development of High Level indicators under the Coordinated Assessments effort as lead by CBFWA. WDFW StreamNet staff worked closely with the PNAMP staff to map population datasets, metadata and data flow diagrams related to the Integrated Status and Trends Monitoring (ISTM) effort as well as relate this dataset development back to the Coordinated Assessments.

Work Element: 119 Manage and Administer Projects

Work Element: 119 Manage and Administer Projects

Title: 1 **Manage project activities**

Description Administer all aspects of the StreamNet project at the regional and cooperating agency levels, including oversight of budget, personnel (including training and staff development), work statement / budget preparation and implementation, coordination among participating agencies, and project guidance through active participation in steering committee work.

Deliverable Project staff and budgets are effectively managed, work detailed in this SOW is accomplished, and required SOW/budget documents are prepared and submitted on schedule.

Project	Accomplishments During Fiscal Year 2011, summarized by Work Element Title
CRITFC	All deliverables were produced on time and within budget.
FWS	All administrative tasks were accomplished.
IDFG	The IDFG StreamNet Project Manager provided supervision, budget management and general oversight. He also participated in all Steering Committee meetings.
MFWP	Montana's participation in StreamNet Steering Committees decreased due to the focus on anadromous coordinated species assessments. The MFWP StreamNet data manager participated in technical committee conference calls and attended a meeting regarding the 1:24,000 National Hydrography Dataset.
ODFW	Oregon StreamNet participated fully in the Steering and Technical Committee meetings. Numerous positions were vacated during the year, and most were filled with temporary staff as ODFW worked out hiring policies given the State's economy. Once again, we were able to hire two StreamNet Data Technicians. We also hired two Barrier & Distribution GIS Analysts using a combination of StreamNet and other funds. Attempts to fill our Application Developer/Database Manager position, which was vacated in February, were not successful. The only suitable candidate declined the position. Staff cross-trained in the field to gain knowledge of field techniques; participated in online technological, computer, GIS, and mandatory agency training; and attended seminars and conferences to learn about new technologies and for networking. One staff member attended a 2 day class on Creating Effective Web Applications using ArcGIS Server and an informal ArcPad training session where he gained a better understanding of the ArcPad tools as well as the workflow for designing a geodatabase for field data capture, loading that onto the mobile device, collecting data in the field (with both Trimble Juno and Yuma devices), then bringing the data back into ArcGIS. Other staff took the ESRI Web Course: Creating and Integrating Data for Natural Resource Applications. The decision was made to close the ODFW Library this year. As a result, staff coordinated the transfer of Library contents Oregon State Archives, the Oregon State Library, the StreamNet Library and several other libraries and ODFW office locations. The Library will close before the end of the year. The Oregon StreamNet Project Leader participated in interviews to hire Coordinated Assessments Data Technicians.
Region	Routine project management continued this year. Four Steering Committee meetings were held this fiscal year to guide project direction and plan for future activities. Because of the anticipated basin wide Category Review of database projects by NPCC, the schedule of steering committee meetings was adjusted to keep in synch with adjustments to the review schedule. The fall and winter meetings were consolidated into a single meeting, with the consolidated meeting focused on guidance about the Category Review and to relate to planned activities for the Coordinated Assessments project. The Category Review was ultimately delayed until early FY-12, with the submission deadline for project proposal documents moved into December. Since direction from the Steering Committee was critical to development of the proposal and establishing priority activities, the fall Steering Committee meeting from FY-12 was moved up to September 22, 2011 and held in conjunction with the Coordinated Assessments Workshop. That provided excellent input for planning the proposal. Development of the proposal started shortly after the Steering Committee meeting. Other project management activities included development of the FY-12 budget and statement of work, personnel management at the Regional and participating agency levels of the project, budget tracking, and contract development and management.
WDFW	WDFW StreamNet staff participated in all Steering Committee and technical meetings as required under our the SOW. All SOW elements were managed within budget.

Work Element 132: Produce Annual Report

Work Element: 132 Produce Annual Report

Title: 1 **Annual report**

Description Produce a detailed Annual Report for FY-10 project activities within 60 days of the end of the fiscal year.

Deliverable The FY-10 annual report is submitted to BPA and uploaded to Pisces.

Project	**Accomplishments During Fiscal Year 2011, summarized by Work Element Title**
All	All of the subprojects provided input on their project activities in FY-10 using the standardized Statement of Work and Reports database. The input was consolidated at PSMFC and the final Annual Report was written and uploaded to Pisces in the first quarter of the fiscal year.

Work Element 185: Produce Pisces Status Report

Work Element: 185 Produce Pisces Status Report

Title: 1 **Status reports**

Description Submit a quarterly Status Report through Pisces within 15 days of the end of each quarter.

Deliverable Quarterly Status Reports are submitted on schedule.

Project	**Accomplishments During Fiscal Year 2011, summarized by Work Element Title**
All	All of the sub-projects except CRITFC entered summaries of their activities into the Status Report in Pisces. PSMFC also entered their summary of activities and then edited and submitted the reports. Status Reports were submitted by the 15th of the month following the end of each quarter except for the last quarter, for which the report was submitted on September 30. CRITFC provided Status Reports to Pisces on a monthly basis under their contract.

Appendix B

Summary of Work Accomplished Outside the SOW

During the course of the year project participants occasionally had opportunities to conduct work that related to StreamNet objectives or data but that was not specifically detailed in the Statement of Work. Often this work was accomplished on other, non-StreamNet funding by staff members who work part of the time on StreamNet. While this work was technically not part of the StreamNet project, these activities had direct relevance to StreamNet goals or the data that we manage.

Project	Summary of work done outside the Statement of Work or on other funding but related to StreamNet
IDFG	Using non-StreamNet funds, IDFG added new streams to the 1:100,000 scale StreamNet hydrography as requested by agency biologists. Work was started to migrate the current 1:100,000 scale Idaho StreamNet whole-stream routing system to the 1:24.000 scale National Hydrography Dataset. Essentially all of the hydrography work done by IDFG is on other funding, but is of direct relevance because StreamNet data are all tied to the hydrography.
MFWP	The majority of the fisheries work outside the StreamNet contract relate to the Western Governors Association (WGA) Wildlife Council "Crucial Areas and Corridors Initiative". MFWP has been involved in a variety of activities with the WGA including the continual development of MFWP CAPS the data associated with CAPS and the application; a pilot project with Idaho, and as Phase II begins in October, participating in a variety of workgroups to prepare for all states to have their Crucial Areas identified and a regional viewer developed by 2013. StreamNet is included in many of these conversations because it is the only regional fisheries data management system in the west.
ODFW	Non-Columbia fish distribution data were updated and/or maintained. Significant effort went into expanding the non-Columbia portion of the ODFW Fish Passage Barrier dataset and converting those data and other data into the Oregon Fish Passage Barrier Data Standard format (OFPBDS). The latest version of the OFPBDS dataset contains over 29,000 barrier features from numerous sources. Updated barrier data consistent with the regional hydrography were submitted to PSMFC StreamNet as a result of these efforts. Dam facility data were compiled from the Rogue Basin Fish Access Team (151 records) and the Bear Creek Watershed Council in the Rogue (26 records). The data were converted into the Oregon Fish Passage Barrier Data Standard. All dam facility records were then converted into StreamNet format, assigned StreamNet mixed scale hydro specific measures and submitted to the StreamNet database at PSMFC. ODFW continued to support the database application designed to track Restoration and Enhancement Program funding applications through enhancements and fixes. We also continued support of the online Fish Screening and Passage, and Fish Passage Transport databases. New development support this year focused on the Wildlife Habitat Conservation and Monitoring Program web application. Oregon StreamNet staff support of the Comprehensive Wildlife Conservation Strategy (Conservation Strategy) continued throughout the year at a very low level, as the new Strategy GIS Analyst did the bulk of the work. Support of the ArcIMS web application Conservation Opportunity Areas (COA) Explorer (http://nrimp.dfw.state.or.us/website/coaexplorer) continued as well. The site provides access to the Strategy's COAs, along with other relevant layers (e.g. habitat, vegetation). We continued a joint project with ODFW monitoring and evaluation staff and NOAA-Fisheries on a data management effort centered on information that fulfills Recovery Planning data needs. NOAA has elected to continue to fund an expanded effort in the next fiscal year. Wildlife Division GIS support continued throughout the year, including: filling general map requests; updating wildlife area maps; georeferencing winter range-related data and performing QA/QC on layer attributes; providing products related to energy siting activities; providing comments on functionality and tools related to wildlife applications; and creating and editing big game and game bird regulation, access and habitat, controlled hunt unit, cougar, wolf, and travel management area layers and maps. GIS support for statewide linkages for wildlife movement continued this year. Staff members continued to provide consultative support to ODFW's Wildlife and Information and Education Divisions regarding the Oregon Hunting Access Map (ORHAM) application, which was released for public use during the last fiscal year. This effort included discussions about long-term maintenance of the application. GIS staff members once again were called on to create the maps used on Oregon's angling regulations. This effort involved working with managers and field biologists to correct errors and incorporate changes, helping to coordinate the printing process, and safeguarding image quality during the printer and website posting processes. The maps were also utilized in various alternative energy related efforts.

Region StreamNet staff assisted a project mainly funded by U.S. Fish and Wildlife Service in Sacramento, CA. USFWS hired PSMFC to develop a database and associated data collection/data management user interface for collecting out-migrant juvenile salmon and steelhead data. Also included in this project is creation of statistical procedures for estimating outmigrant production estimates based on the raw out-migrant data; performing the statistical analyses will be integrated into the user interface mentioned above. Because of the overlap with data collection, management, and analysis needs in the Columbia Basin, the StreamNet Regional Fisheries Biologist is assigned to lead this effort for PSMFC. Some of this work was also mentioned under Work Elements 160 and 189, above.

WDFW In 2011, WDFW captured and evaluated Washington State historical landing data recorded on fish tickets between 1949 and 1969 for Washington State and landings within the Columbia River. WDFW StreamNet staff participated in ongoing efforts to compile Lower Columbia River historical data under the auspices of the Integrated Status and Trends Monitoring (ISTM) effort. Most notably during this period, our Lower Columbia staff members were able to compile historical data sets for age and scales, spawning ground surveys, and juvenile migrant (smolt) data. WDFW continued efforts to compile other statewide smolt data into our Juvenile Migrant Exchange database with help from a grant from Eco Trust.